

FIG. 1

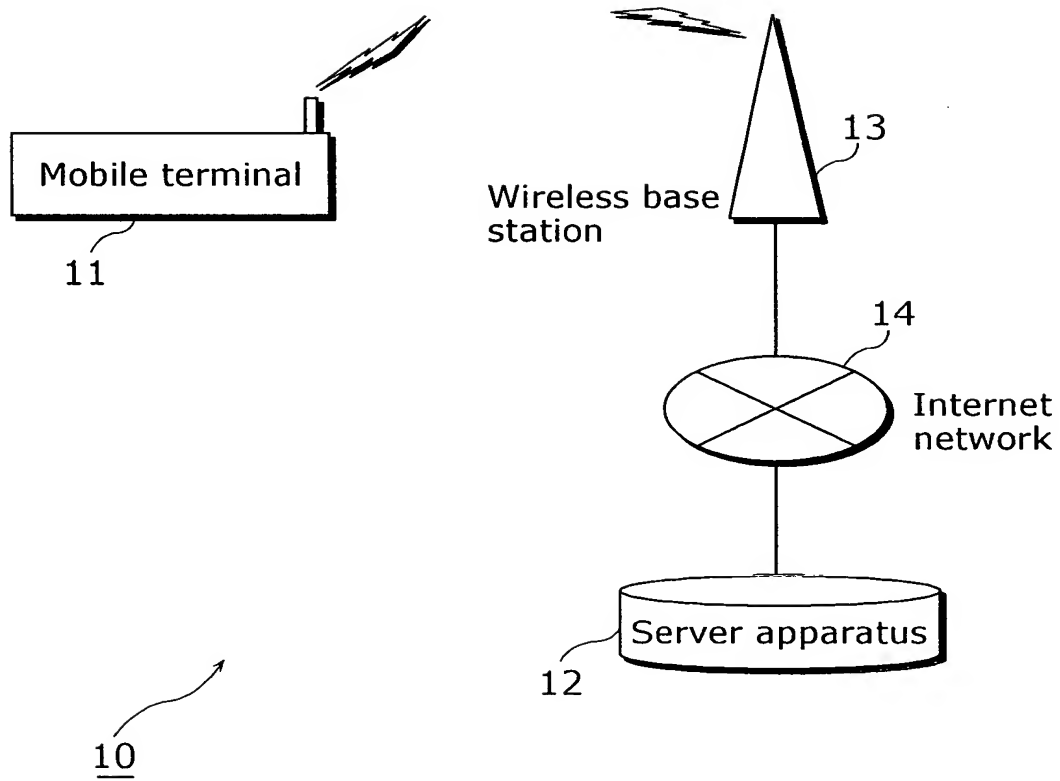


FIG. 2

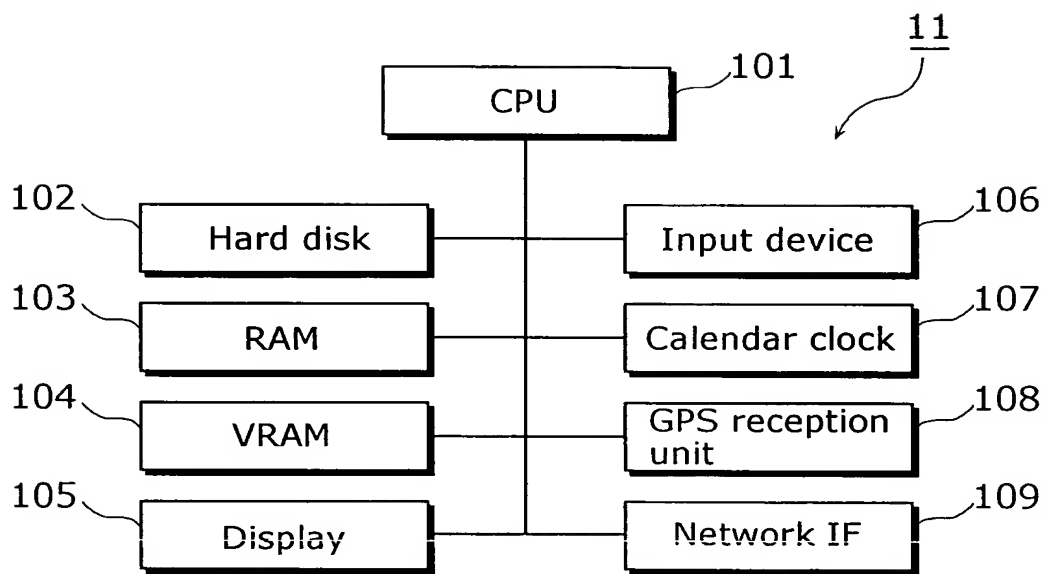


FIG. 3

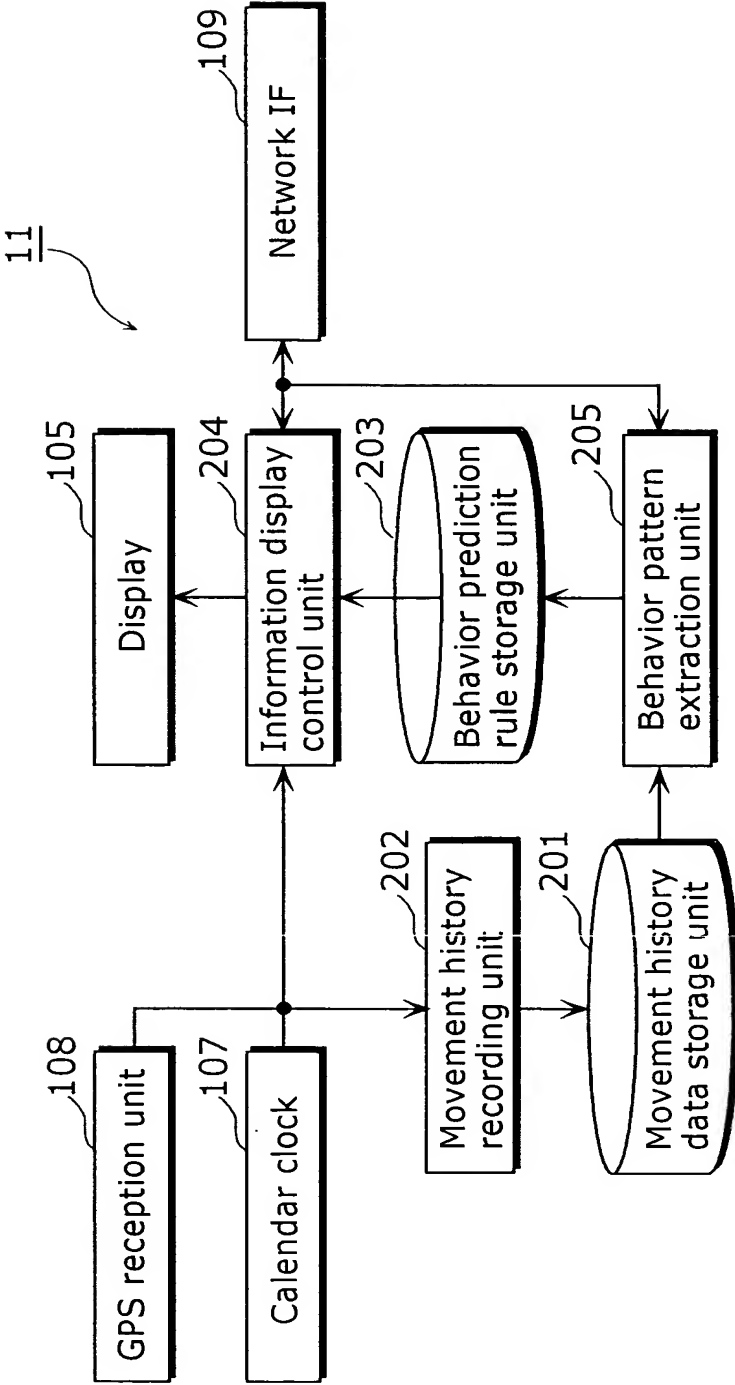


FIG. 4

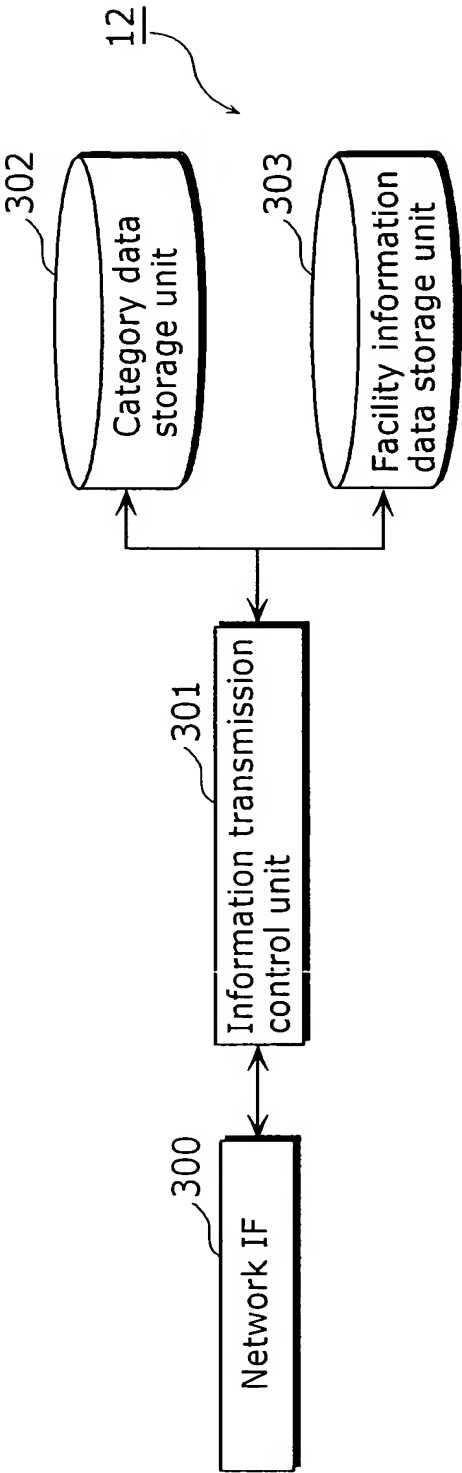


FIG. 5

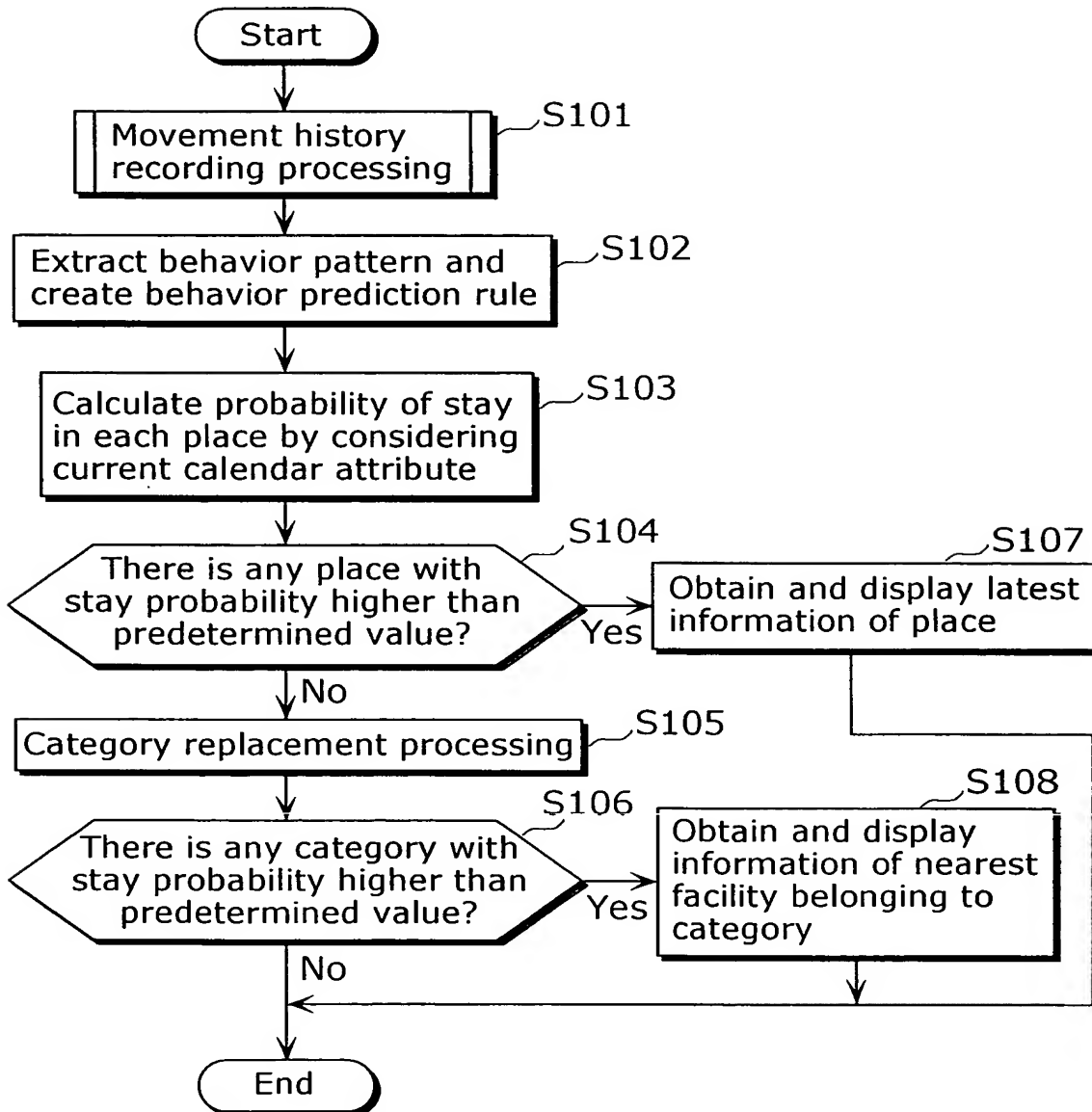


FIG. 6

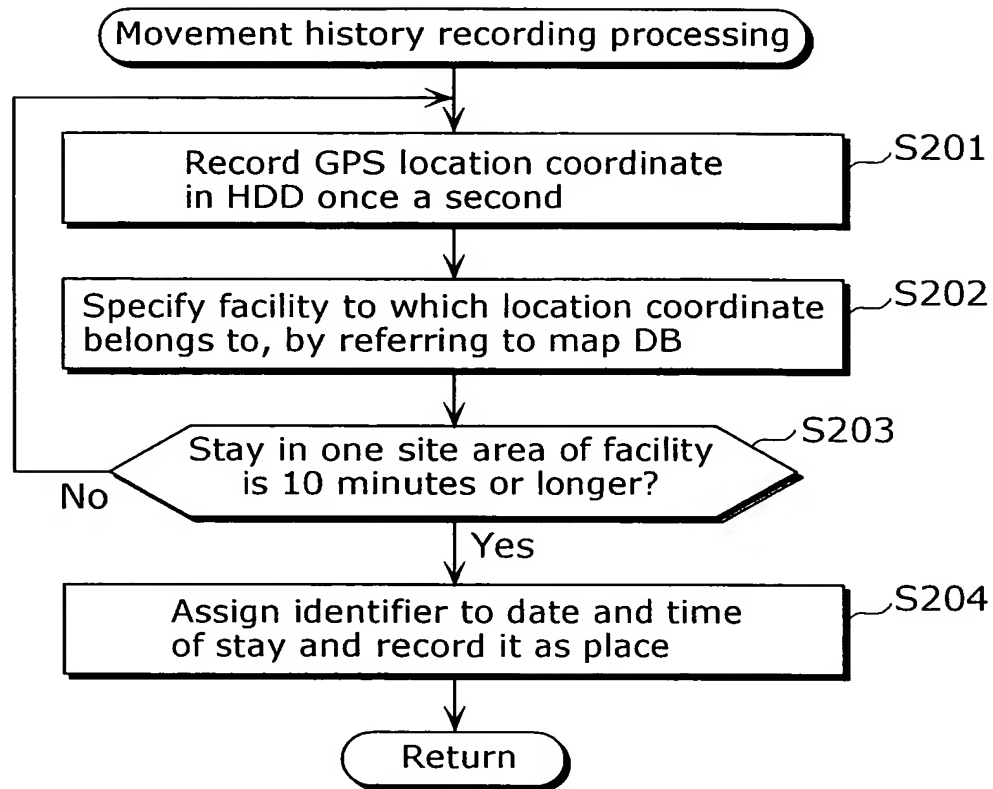


FIG. 7

| Date and Time | Location Coordinate |
|------------------------------|--------------------------------------|
| ⋮ | ⋮ |
| (Tue) Feb. 4, 2003, 10:23:34 | E1 east longitude, N1 north latitude |
| (Tue) Feb. 4, 2003, 10:23:35 | E1 east longitude, N1 north latitude |
| (Tue) Feb. 4, 2003, 10:23:36 | E1 east longitude, N2 north latitude |
| ⋮ | ⋮ |

FIG. 8

| Facility Identifier | Site Area (Upper-left Coordinate of Rectangle, Length and Width) |
|---------------------|--|
| Facility 1 | e1 east longitude, n1 north latitude, 10m, 10m |
| Facility 2 | e2 east longitude, n2 north latitude, 20m, 10m |
| Facility 3 | e3 east longitude, n3 north latitude, 15m, 10m |
| Facility 4 | e4 east longitude, n4 north latitude, 20m, 20m |
| ⋮ | ⋮ |

FIG. 9

| Date and time | Place |
|-----------------------------------|----------------------------------|
| ⋮ | ⋮ |
| (Sat) Feb. 1, 2003 18:00~18:20 | Facility 2 (Regal Host Keihanna) |
| (Sat) Feb. 1, 2003 18:50~19:20 | Facility 4 (Book Born) |
| ⋮ | ⋮ |
| (Sat) Feb. 8, 2003 18:15~19:00 | Facility 2 (Regal Host Keihanna) |
| ⋮ | ⋮ |

130

FIG. 10

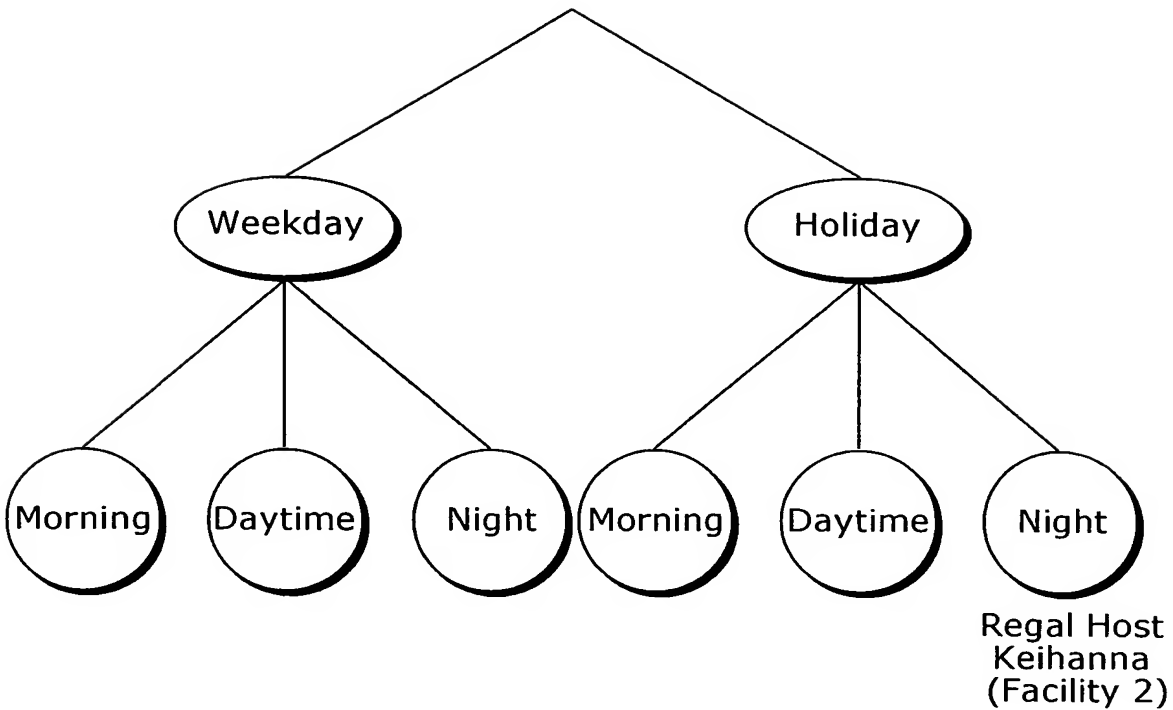


FIG. 11

| Date and Time | Location of Stay | Number of Stays | Probability of Stay |
|-----------------|-----------------------------------|-----------------|---------------------|
| Holiday night | Facility 1 (Boss Burger Keihanna) | 78 | 52% |
| | Facility 2 (Regal Host Keihanna) | 45 | 30% |
| | Facility 3 (Mary's Coffee) | 13 | 8% |
| | ⋮ | ⋮ | ⋮ |
| Weekday daytime | Facility 1 (Boss Burger Keihanna) | 2 | 1% |
| ⋮ | ⋮ | ⋮ | ⋮ |

140

FIG. 12

Facility Information Data

303a

| Facility Identifier | Facility Name | Latest Information |
|---------------------|----------------------|---------------------------------------|
| Facility 1 | Boss Burger Keihanna | Croquette Burger ¥190 Now on Sale ... |
| Facility 2 | Regal Host Keihanna | Nostalgic Western Food Festival ... |
| Facility 3 | Mary's Coffee | Fresh Pot of Espresso... |
| Facility 4 | Book Born | Hot Latest Novel Arrived ... |
| ⋮ | ⋮ | ⋮ |
| Facility A1 | Ghyuutami | Beer ¥100 until 19:00 ... |
| Facility A2 | Kurokiya | Half-price for Drinks ... |
| ⋮ | ⋮ | ⋮ |

FIG. 13

Category Data

302a

| Facility Identifier | Category |
|---------------------|------------|
| Facility 1 | Restaurant |
| Facility 2 | Restaurant |
| Facility 3 | Cafe |
| Facility 4 | Book store |
| ⋮ | ⋮ |
| Facility A1 | Pub |
| Facility A2 | Pub |
| ⋮ | ⋮ |

FIG. 14

303b

| Facility Identifier | Category | Facility Name | Location Coordinate | Latest Information |
|---------------------|------------------|----------------------|---|---------------------------------------|
| Facility 1 | Restaurant | Boss Burger Keihanna | East longitude E1, North latitude N1 | Croquette Burger ¥190 Now on Sale ... |
| Facility 2 | Restaurant | Regal Host Keihanna | East longitude E2, North latitude N2 | Nostalgic Western Food Festival ... |
| - - - - | - - - - | - - - - | - - - - | - - - - |
| Facility A1 | Pub | Gyuutami | East longitude E11, North latitude N11 | Beer ¥100 until 19:00... |
| Facility A2 | Pub | Kurokiya | East longitude E12, North latitude N12 | Half-price for Drinks ... |
| - - - - | - - - - | - - - - | - - - - | - - - - |

FIG. 15A

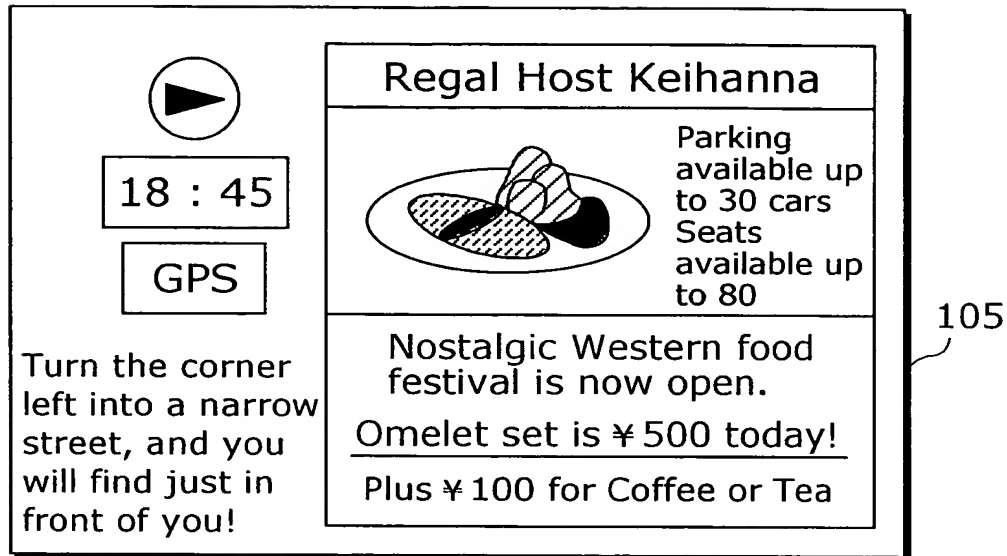


FIG. 15B

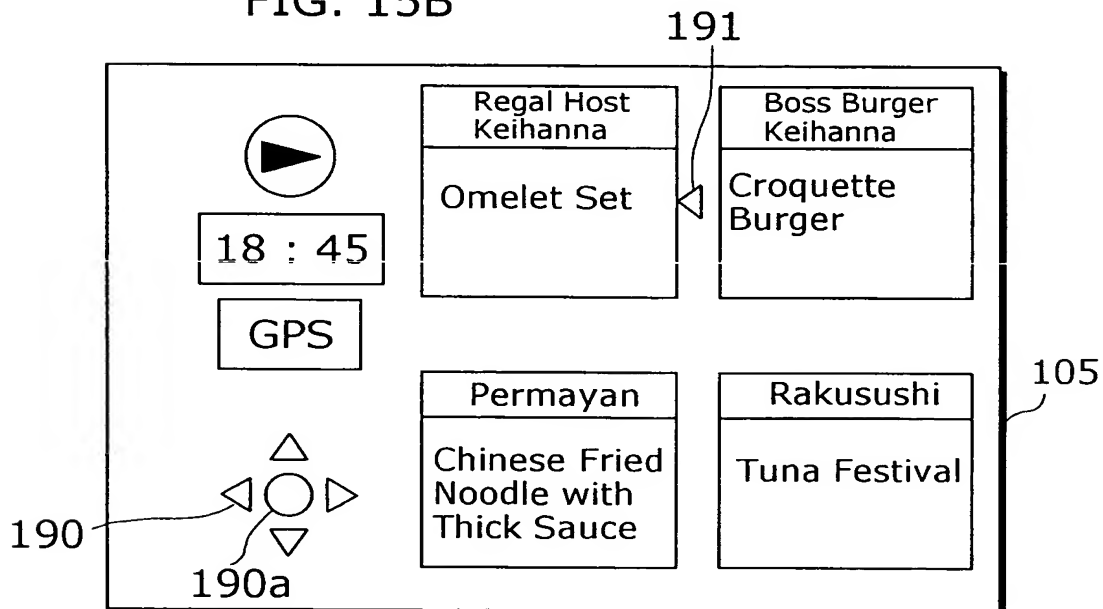


FIG. 16

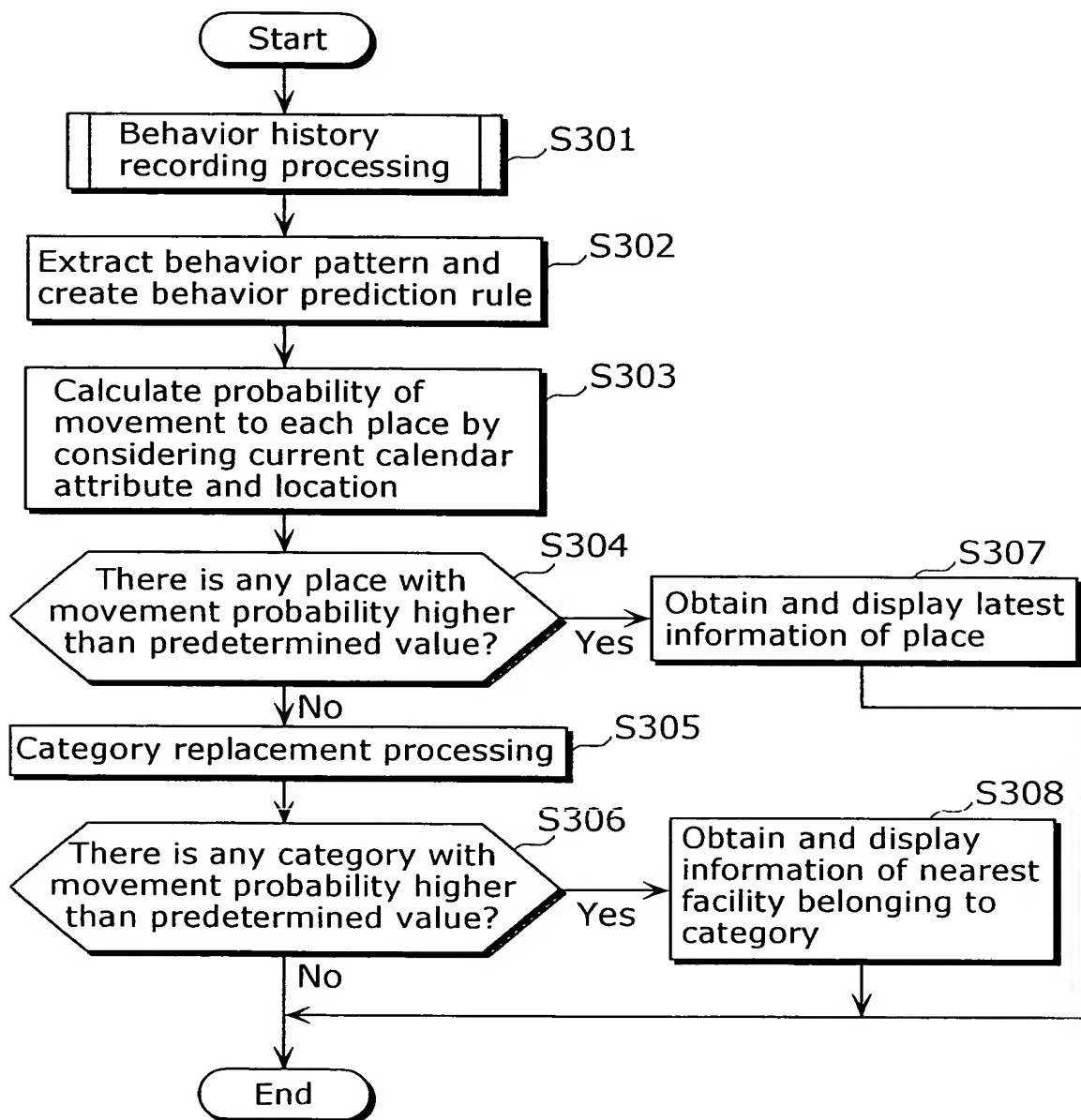


FIG. 17

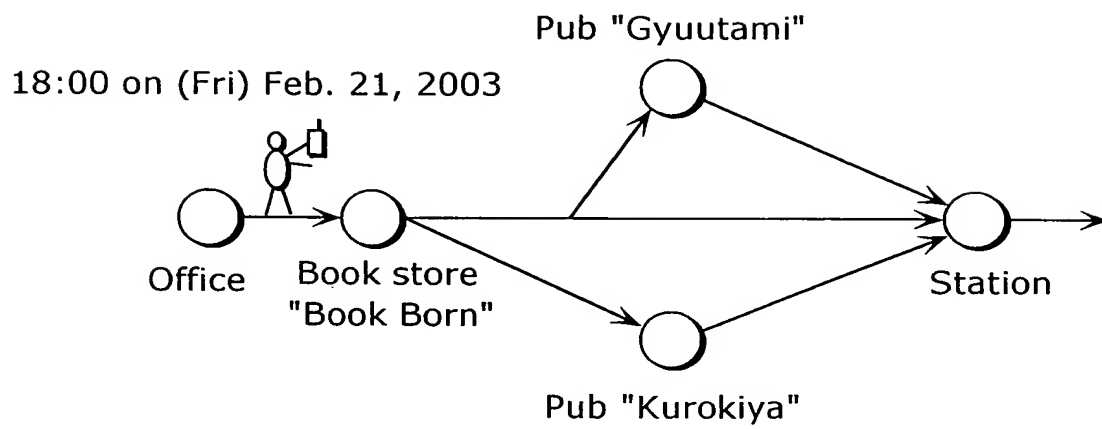


FIG. 18

| Date and Time | Place or Path |
|------------------------------------|--------------------------|
| ⋮ | ⋮ |
| (Fri) Feb. 7, 2003 9:00~18:00 | Facility A0 (Office) |
| (Fri) Feb. 7, 2003 18:10~18:30 | Facility 4 (Book Born) |
| (Fri) Feb. 7, 2003 18:00~18:10 | Facility A0 → Facility 4 |
| (Fri) Feb. 7, 2003 18:45~21:00 | Facility A1 (Gyuutami) |
| ⋮ | ⋮ |
| (Fri) Feb. 14, 2003 18:20~18:30 | Facility A0 → Facility 4 |
| (Fri) Feb. 14, 2003 19:10~21:30 | Facility A2 (Kurokiya) |
| ⋮ | ⋮ |

230

FIG. 19

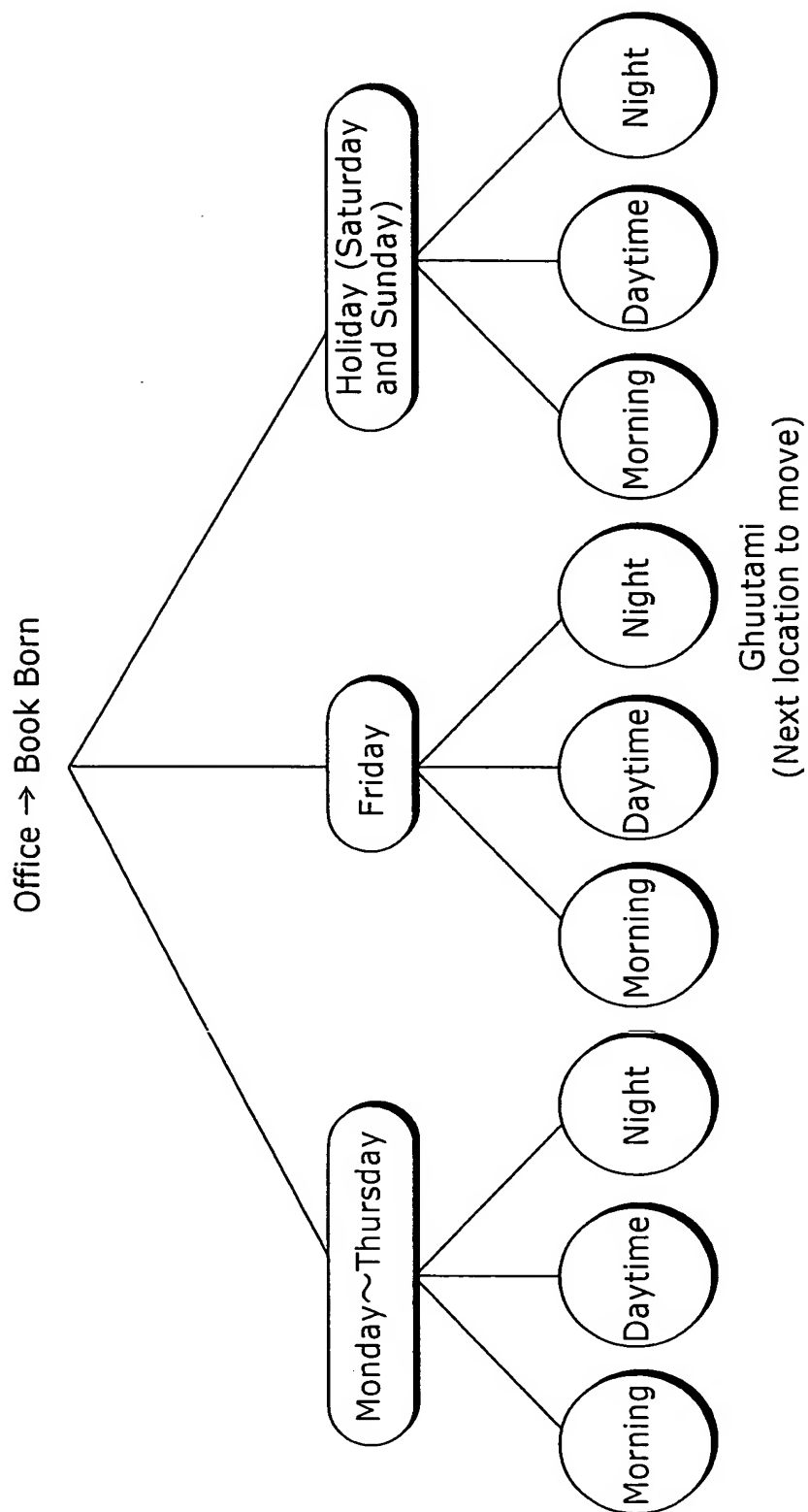


FIG. 20

| Date and Time / Location | Next location | Number of movements | Probability of movement |
|---|-------------------------------------|---------------------|-------------------------|
| ⋮ | ⋮ | ⋮ | ⋮ |
| Date and Time: Friday night Location: Facility A0 (Office) → Facility 4 (Book Born) | Facility A1 (Ghuutami) | 45 | 60% |
| | Facility A2 (Kurokiya) | 15 | 20% |
| | Facility A3 (Pachinko King) | 3 | 4% |
| | ⋮ | ⋮ | ⋮ |
| ⋮ | ⋮ | ⋮ | ⋮ |
| Date and Time: holiday daytime Location: Facility 20 (Home) | Facility 21 (Department store A) | 50 | 60% |
| | Facility 22 (Department store B) | 10 | 12% |
| | ⋮ | ⋮ | ⋮ |
| | ⋮ | ⋮ | ⋮ |

240

FIG. 21

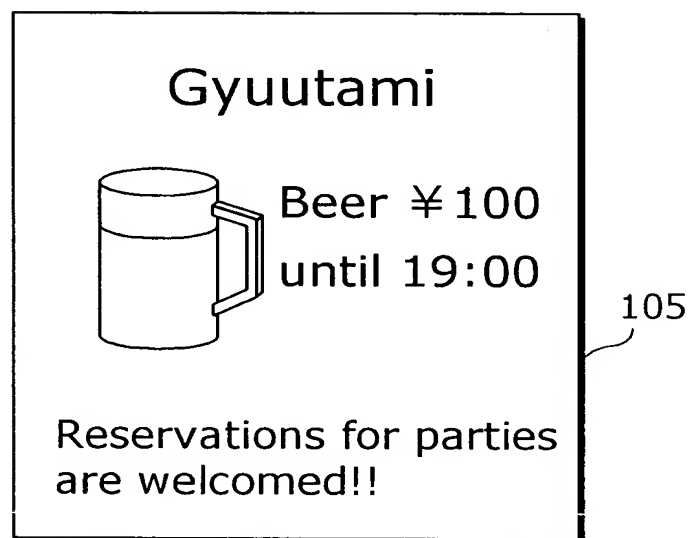


FIG. 22

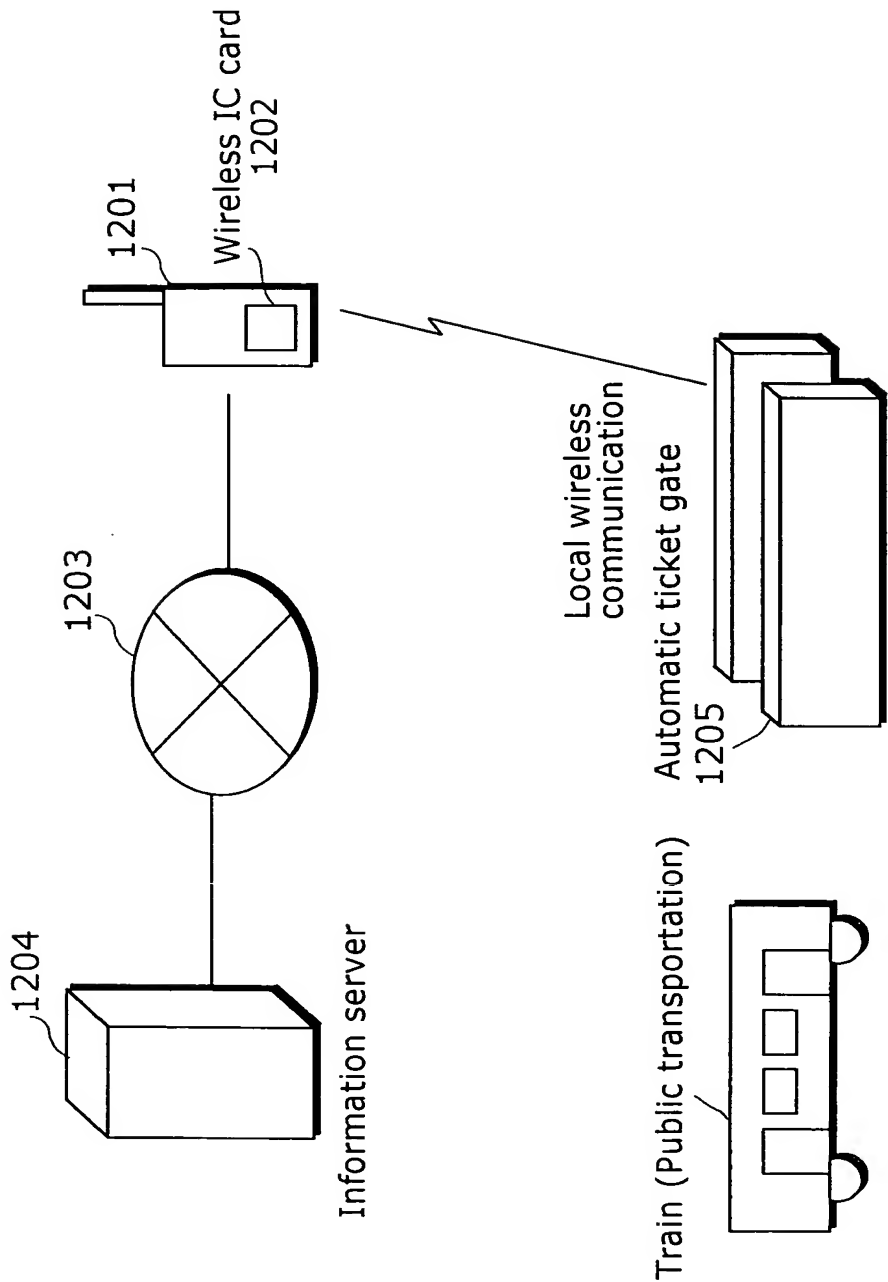
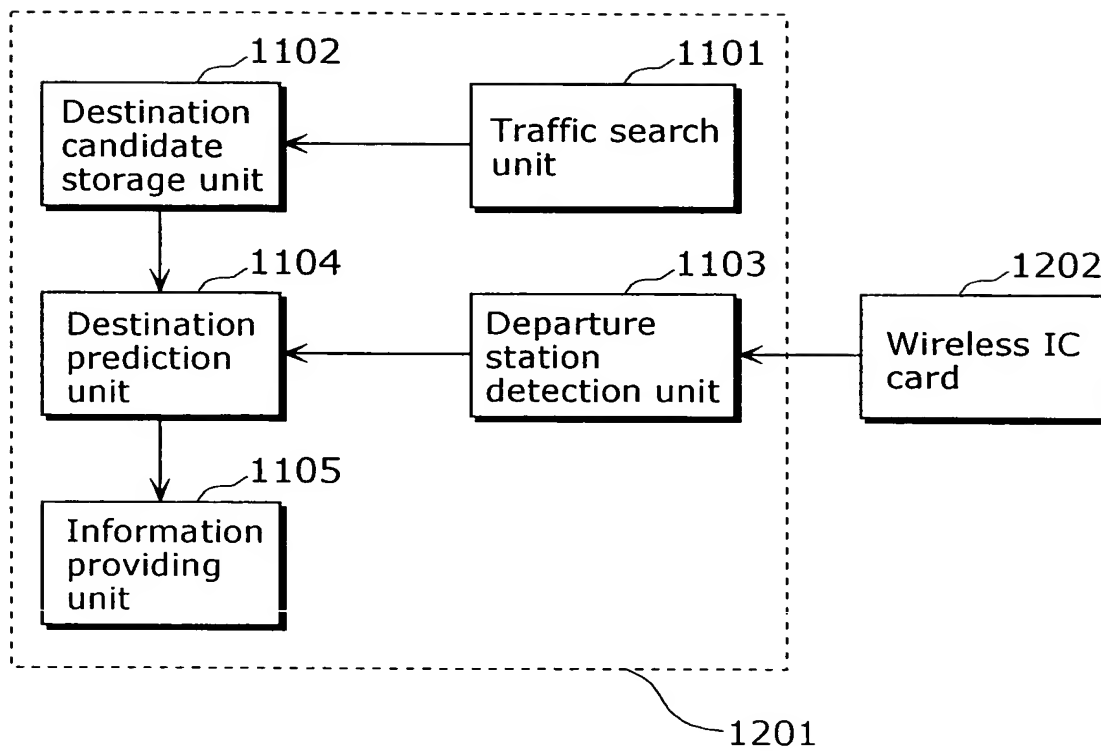


FIG. 23



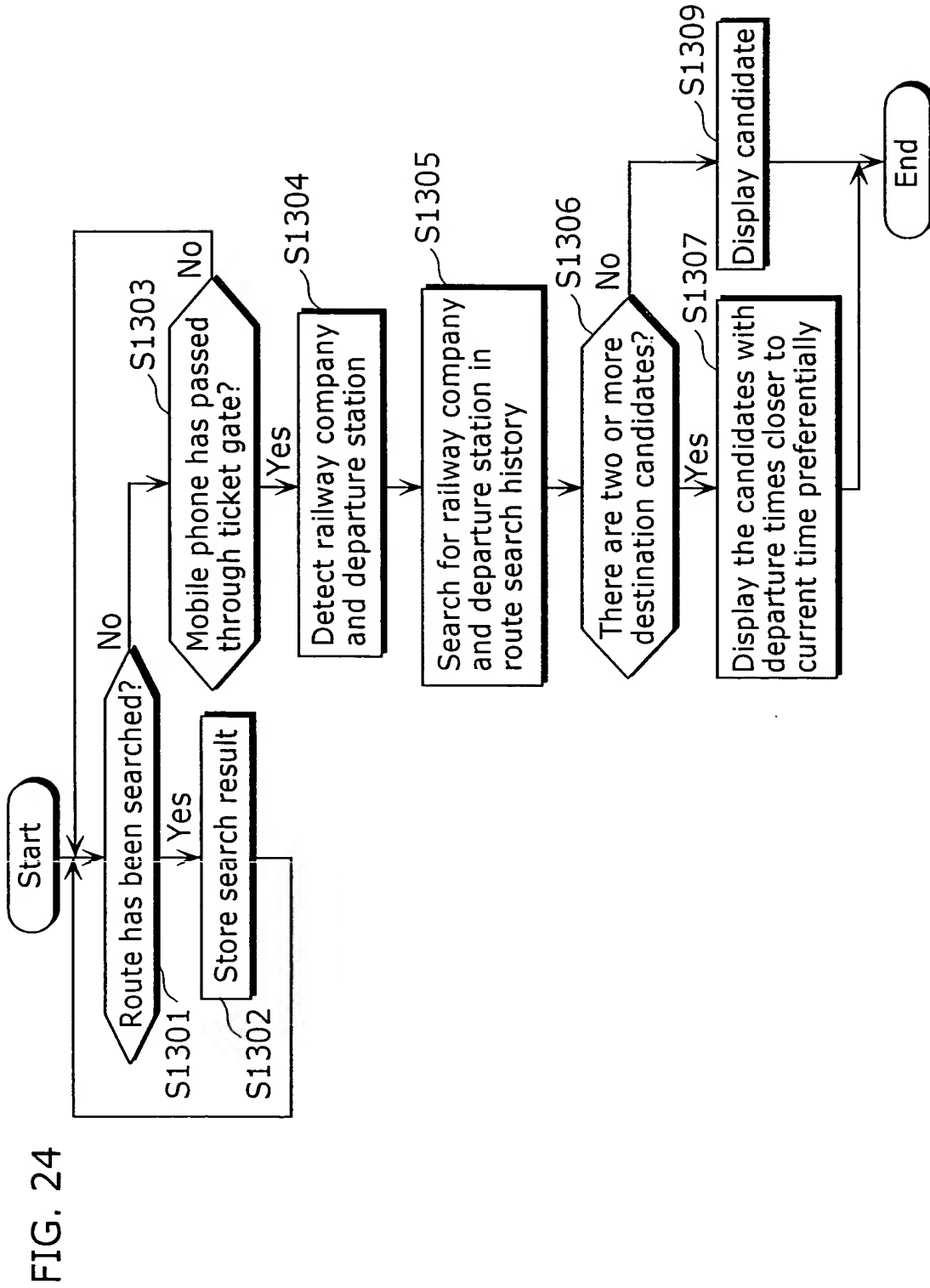


FIG. 25

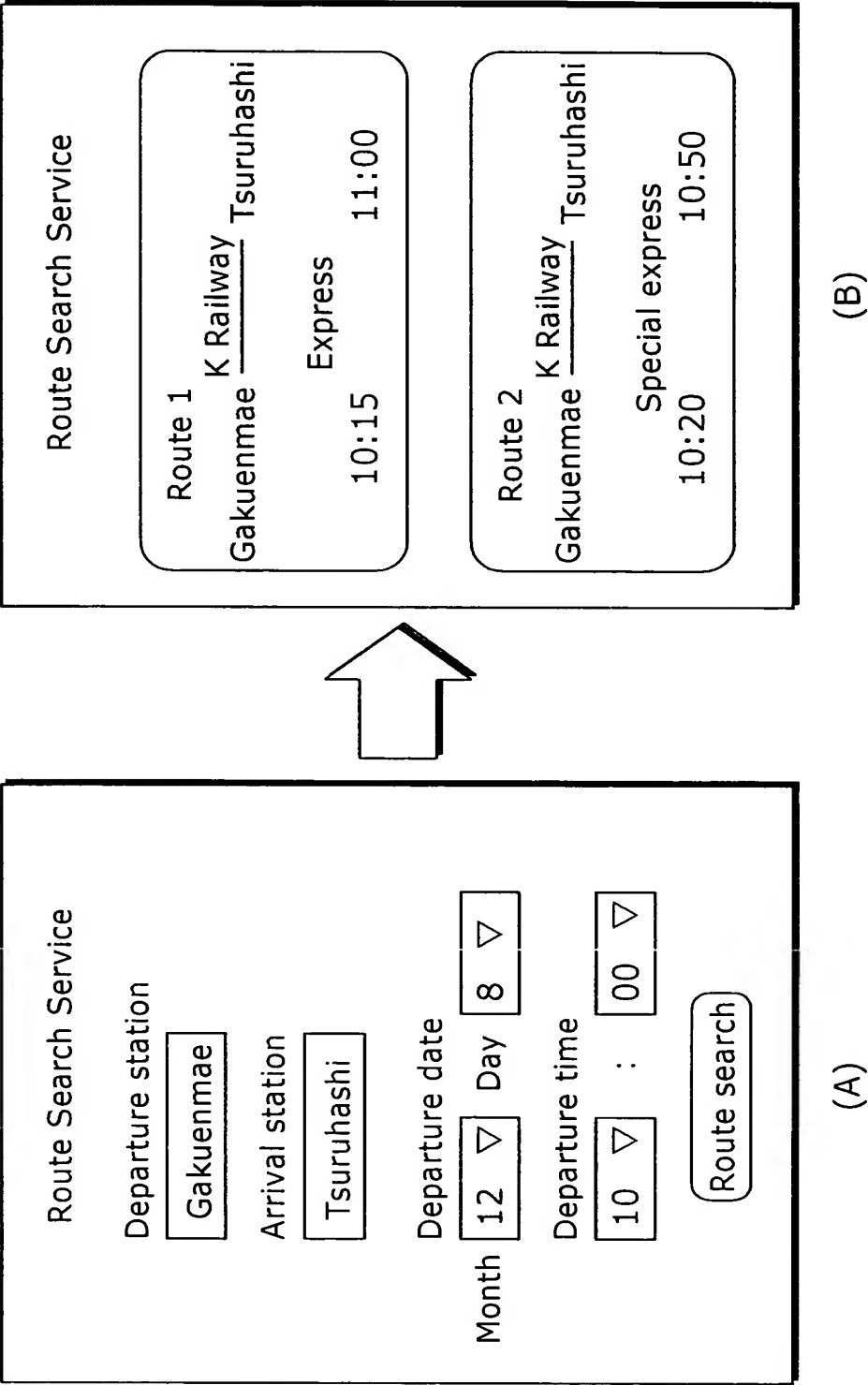


FIG. 26

| Search date & time | Specified date & time (Departure time) | Departure station | Arrival station | Route (Railway) | Time required |
|-----------------------|--|----------------------|--------------------|-----------------------|------------------|
| 2003/12/01/ 22:10 | 2003/12/08/ 10:00 | Gakuenmae | Tsuruhashi | K Railway | 45 |
| 2003/12/04/ 21:15 | 2003/12/10/ 9:00 | Kyoto | Shin-Osaka | J Railway, Nishi line | 64 |
| 2003/12/05/ 22:10 | 2003/12/15/ 10:00 | Tokyo | Shinagawa | J Railway, Yama line | 15 |
| 2003/12/05/ 22:15 | 2003/12/15/ 19:00 | Shinagawa | Tokyo | J Railway, Yama line | 15 |
| 2003/12/06/ 10:10 | 2003/12/10/ 11:00 | Gakuenmae | Saidaiji | K Railway | 10 |
| ... | ... | ... | ... | ... | ... |
| | | | | | |
| | | | | | |

1501

1502

FIG. 27

| Route Search Service | |
|-------------------------------|------------------------|
| Predicted destination station | Estimated arrival time |
| Tsuruhashi | 10:50 |
| Saidaiji | 10:10 |

FIG. 28

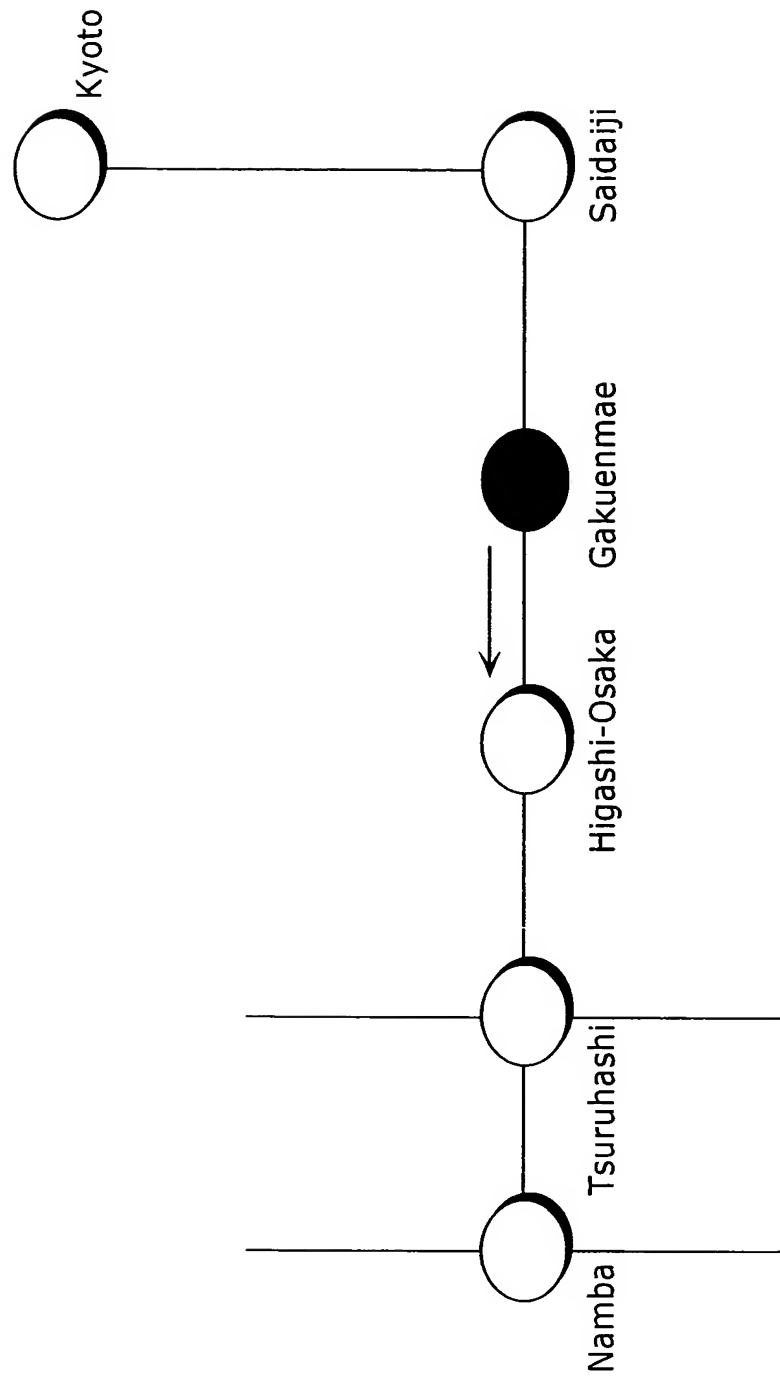


FIG. 29

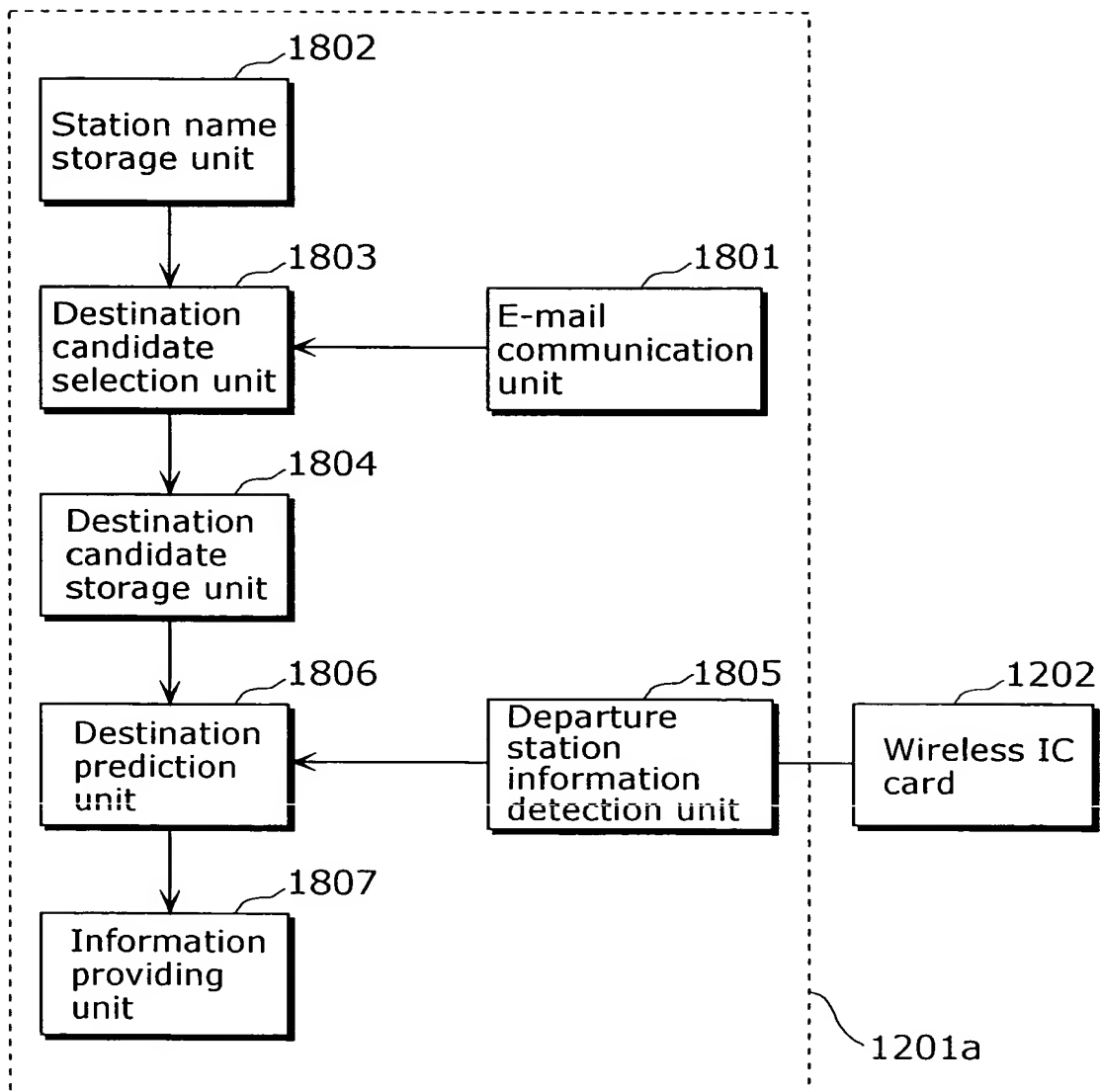


FIG. 30

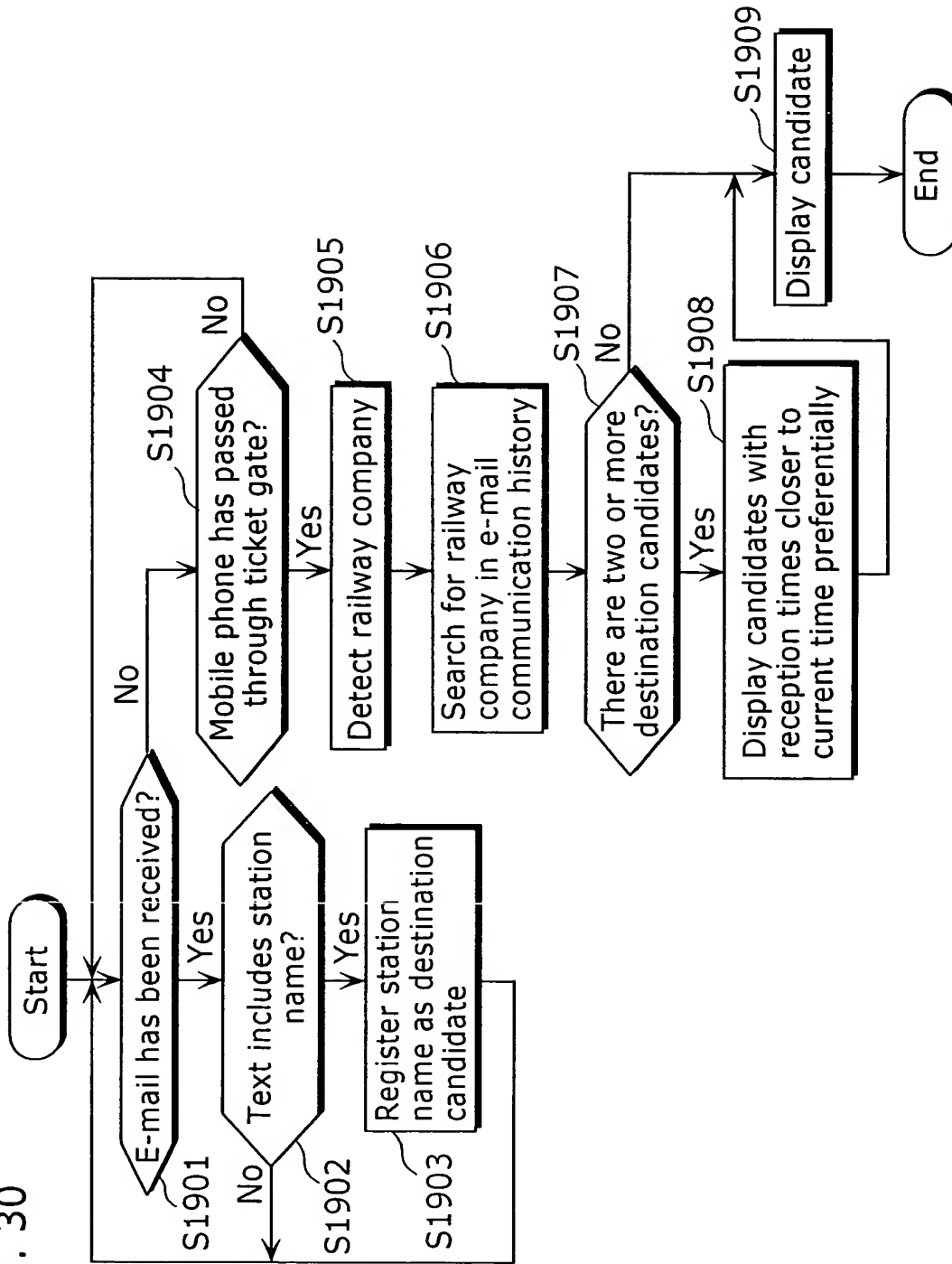


FIG. 31

| Route | Station name |
|-----------|--|
| K Railway | Tsuruhashi, Higashi-Osaka, Gakuenmae, Namba, ... |
| J Railway | Osaka, Tsuruhashi, Tennoji, ... |
| H Railway | Umeda, Toyonaka, Ikeda, Juso, ... |
| N Railway | Namba, Sakai, Shin-Imamiya, ... |
| ... | ... |

FIG. 32

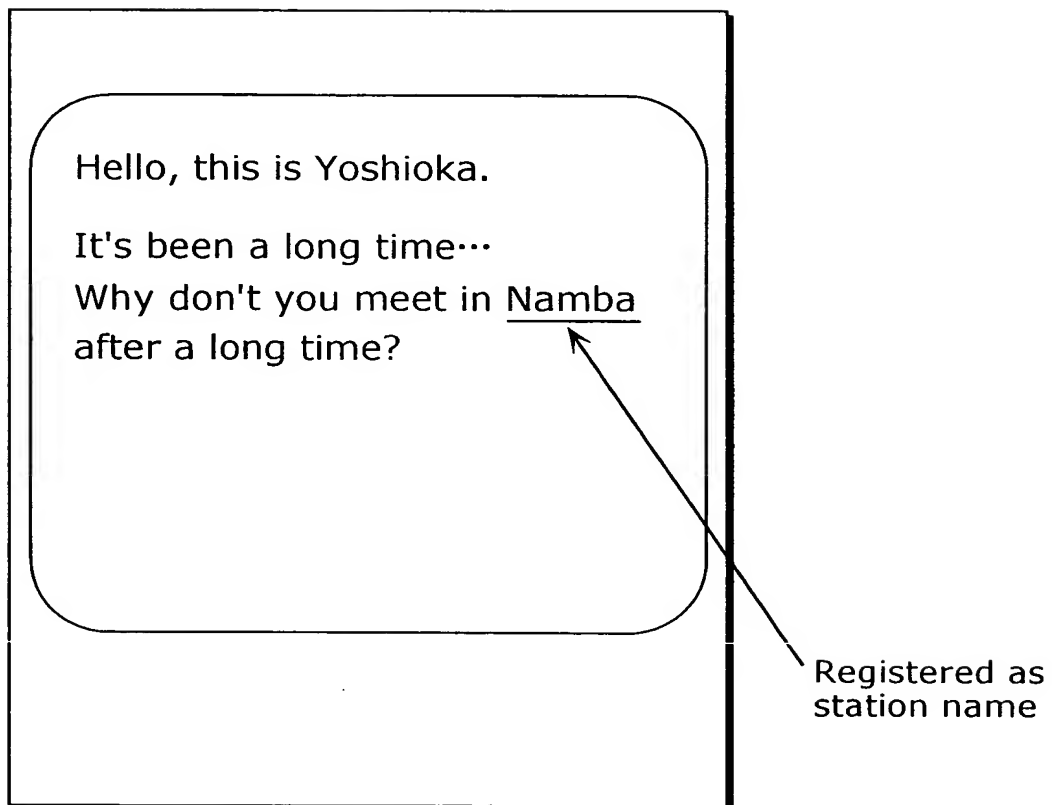


FIG. 33

| Station name | Route | Registration time | Reception time | Address of receiver |
|---------------|------------------------|----------------------|----------------------|---------------------|
| Namba | K Railway N Railway | 2003/10/01/ 8:23 | 2003/10/01/ 8:12 | yosh @kkk.ne.jp |
| Higashi-Osaka | K Railway | 2003/10/01/ 22:23 | 2003/10/01/ 22:05 | yashik @ddd.ne.jp |
| Gakuenmae | K Railway | 2003/10/02/ 18:12 | 2003/10/02/ 16:32 | hito @pppp.ne.jp |
| Umeda | H Railway | 2003/10/05/ 11:21 | 2003/10/05/ 10:52 | ka @ppp.ne.jp |
| ... | ... | ... | ... | ... |

FIG. 34

| Route Search Service | |
|-------------------------------|------------------------|
| Predicted destination station | Estimated arrival time |
| Namba | 15:50 |
| Higashi-Osaka | 15:15 |

FIG. 35

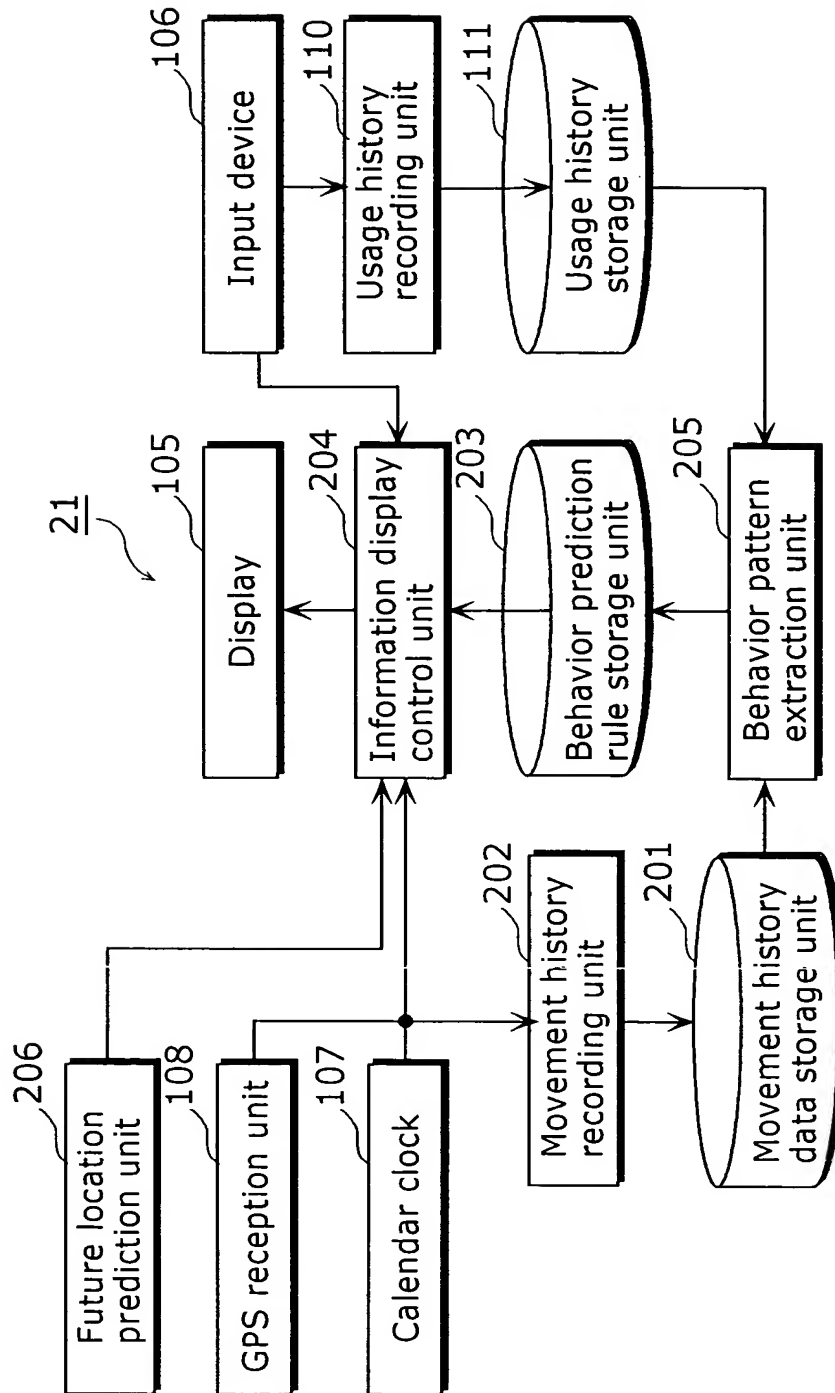


FIG. 36

| Usage date & time | Usage location | Usage history |
|-----------------------------|---------------------|--|
| (Fri) Feb. 7, 2003 20:00 | Office → Station | Application: E-mail |
| | | Address : Kazoku@xyz.ne.jp (to Wife) |
| | | Title: Coming home soon |
| | | Message: I've just left the office. Please prepare meal for me. |
| (Fri) Feb. 7, 2003 21:45 | Home | Application: E-mail |
| | | Address: ABC . . . (Mr. Yamada, friend) |
| | | Title: XYZ . . . |
| | | Message: XYZ . . . |
| (Sat) Feb. 8, 2003 9:15 | Home | Application: Game |
| | | Game software: Game software A |
| | | Information so far: EFG |
| ⋮ | ⋮ | ⋮ |

FIG. 37

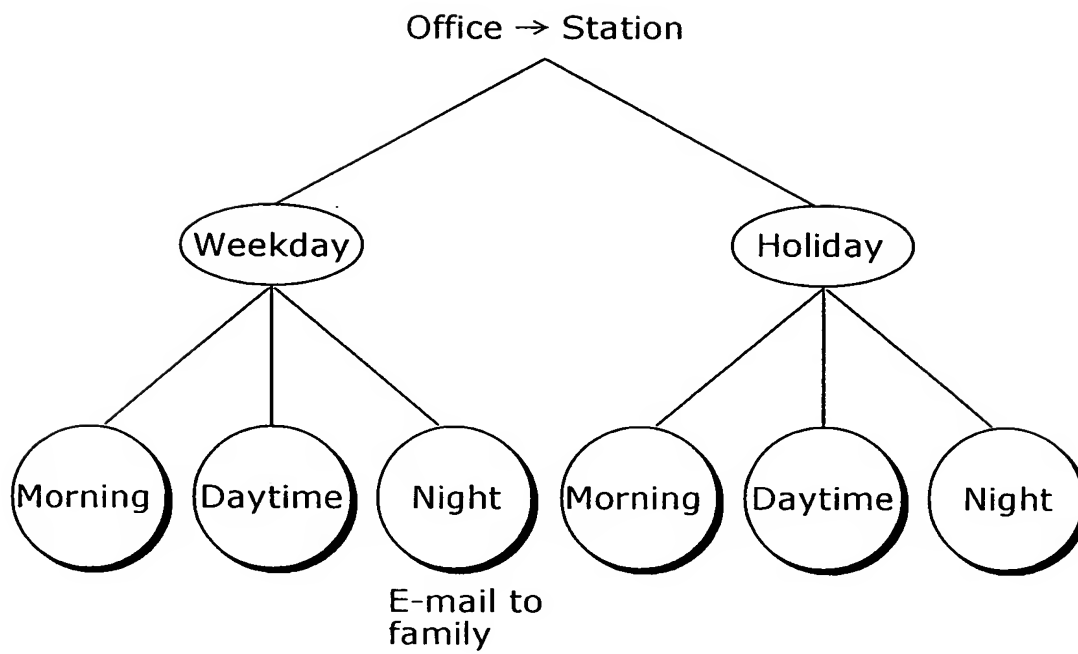


FIG. 38

320

| Usage date & time Usage location | Application | Items | Number of uses | Details of usage |
|--|-------------------------------|--|-------------------|---|
| Date & time Weekday night Location Office → Station | E-mail | To Wife Address: kazoku... | 75 | Title: Coming home soon Message: I've just left the office ... |
| | | To Friend (Mr. Yamada) Address: yamada... | 15 | Title: How are you? Message: Hello ... |
| | | ... | ... | ... |
| | Game | Game software A | 12 | Information so far: EFG |
| Date & time Weekday night Location Home | ... | Game software B | 3 | Information so far: HJK |
| | | ... | ... | ... |
| | | ... | ... | ... |
| | E-mail to Friend (Mr. Kimura) | ... | 24 | Title: Good morning Message: Good morning. ... |
| Date & time Holiday morning Location Home | ... | ... | ... | ... |
| | | ... | ... | ... |

FIG. 39

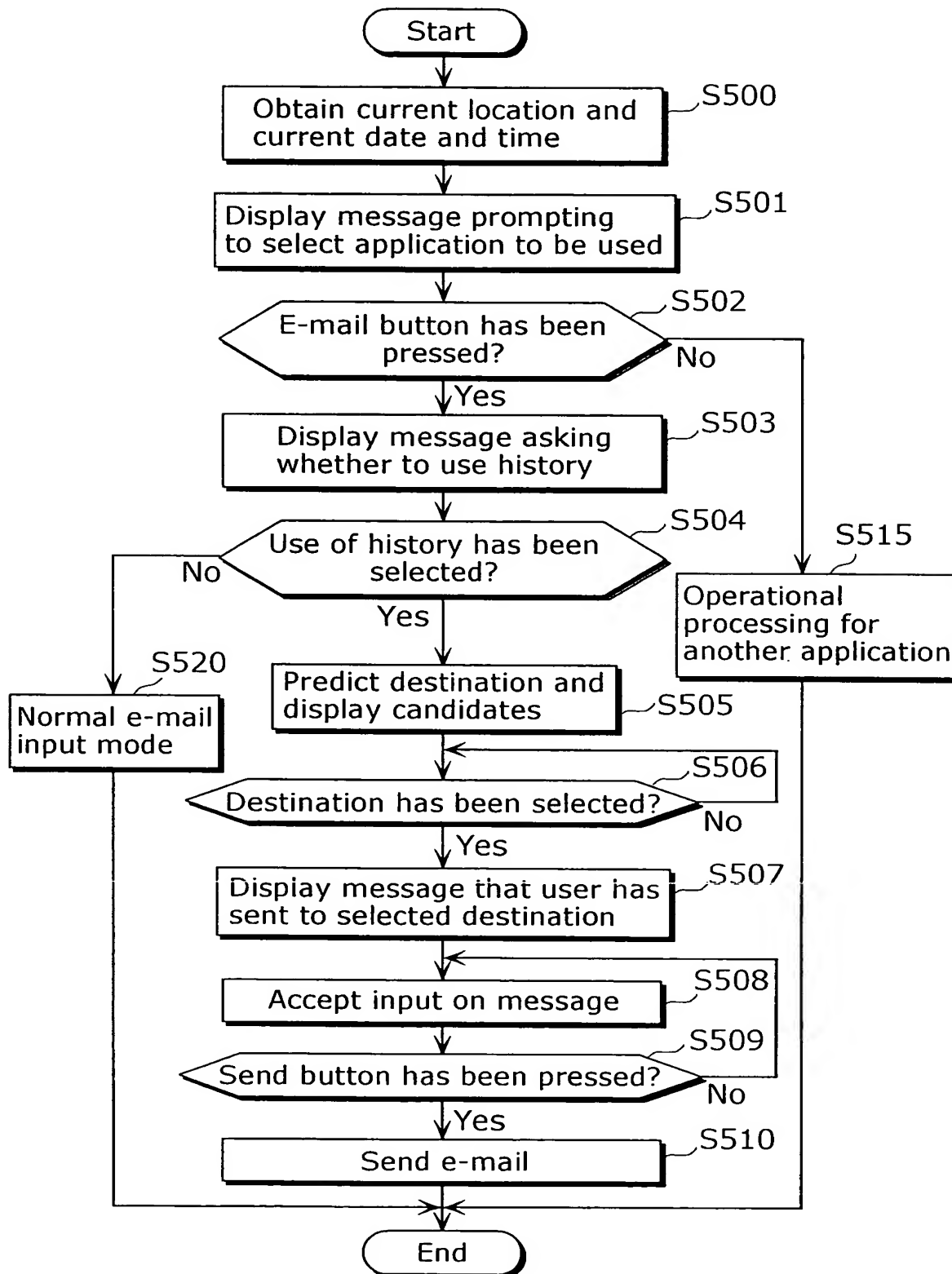


FIG. 40

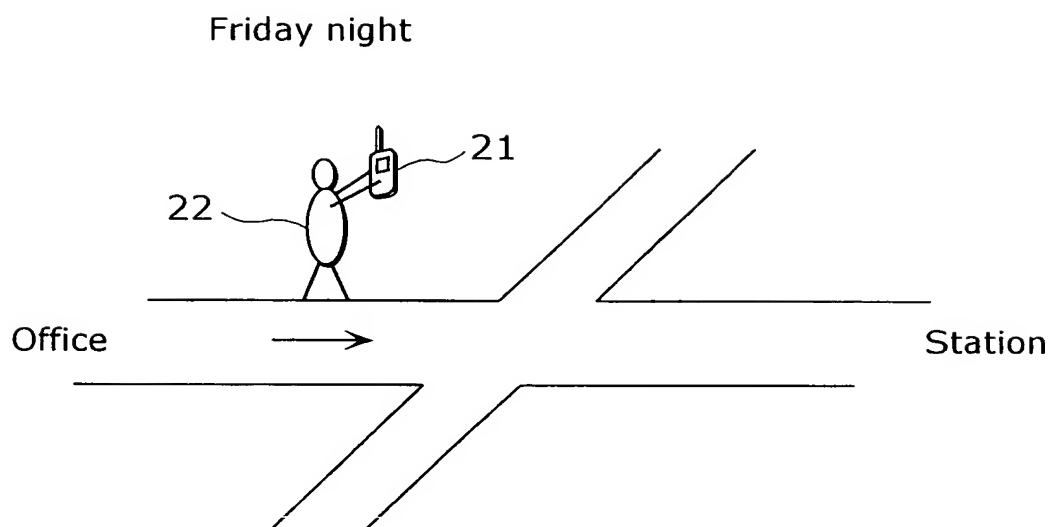


FIG. 41A

105

Select application to be used.

| | |
|--------|---|
| E-mail | ◀ |
| Game | |

FIG. 41B

105

Will you use history?

| | |
|-----|---|
| Yes | ◀ |
| No | |

FIG. 41C

105

Select e-mail destination.

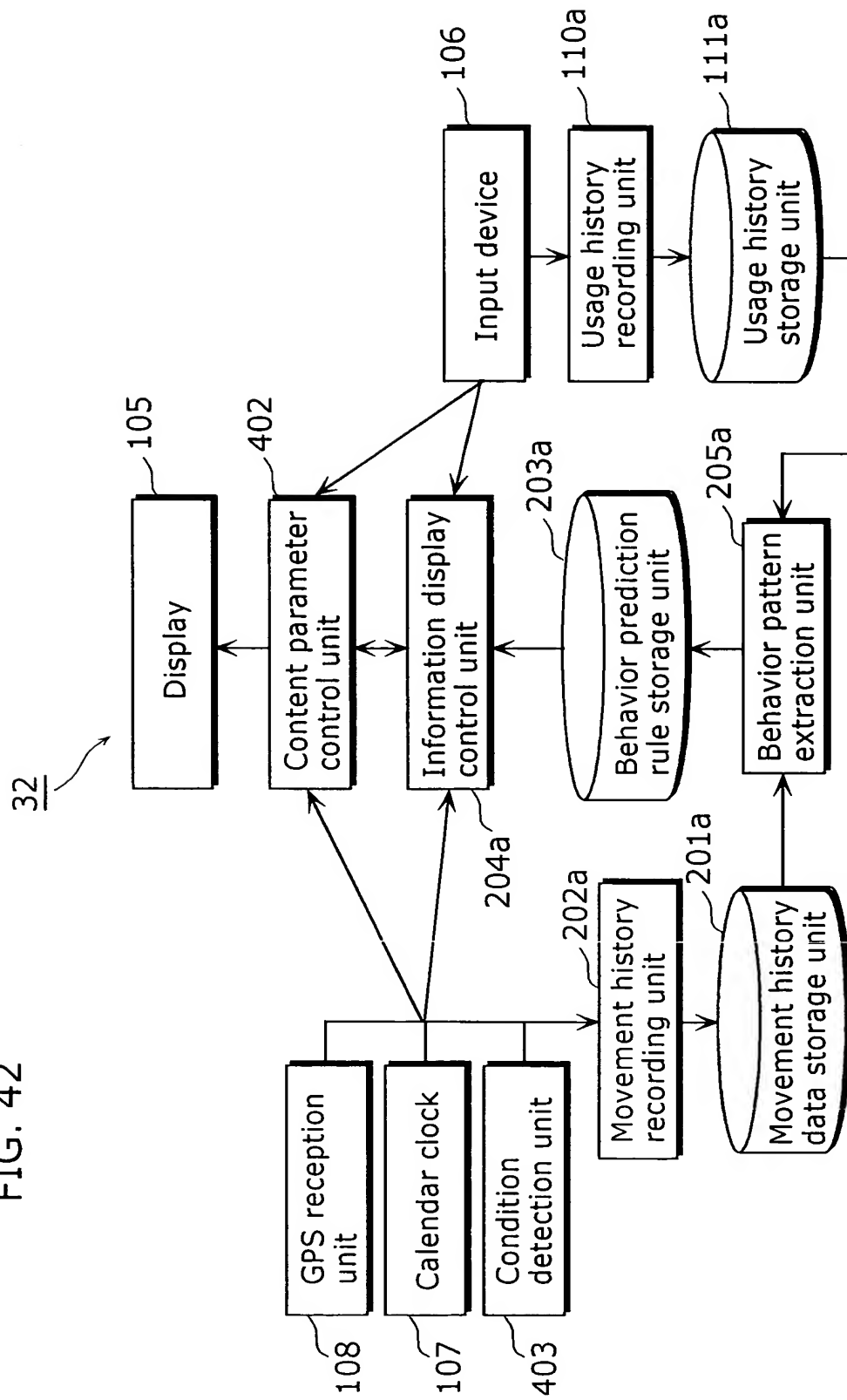
| | |
|---------------|---|
| Wife | ◀ |
| Mr. Yamada | |

FIG. 41D

105

Destination: Wife
Title: Coming home soon
Message:
I've just left the office.
Please prepare meal for me.

FIG. 42



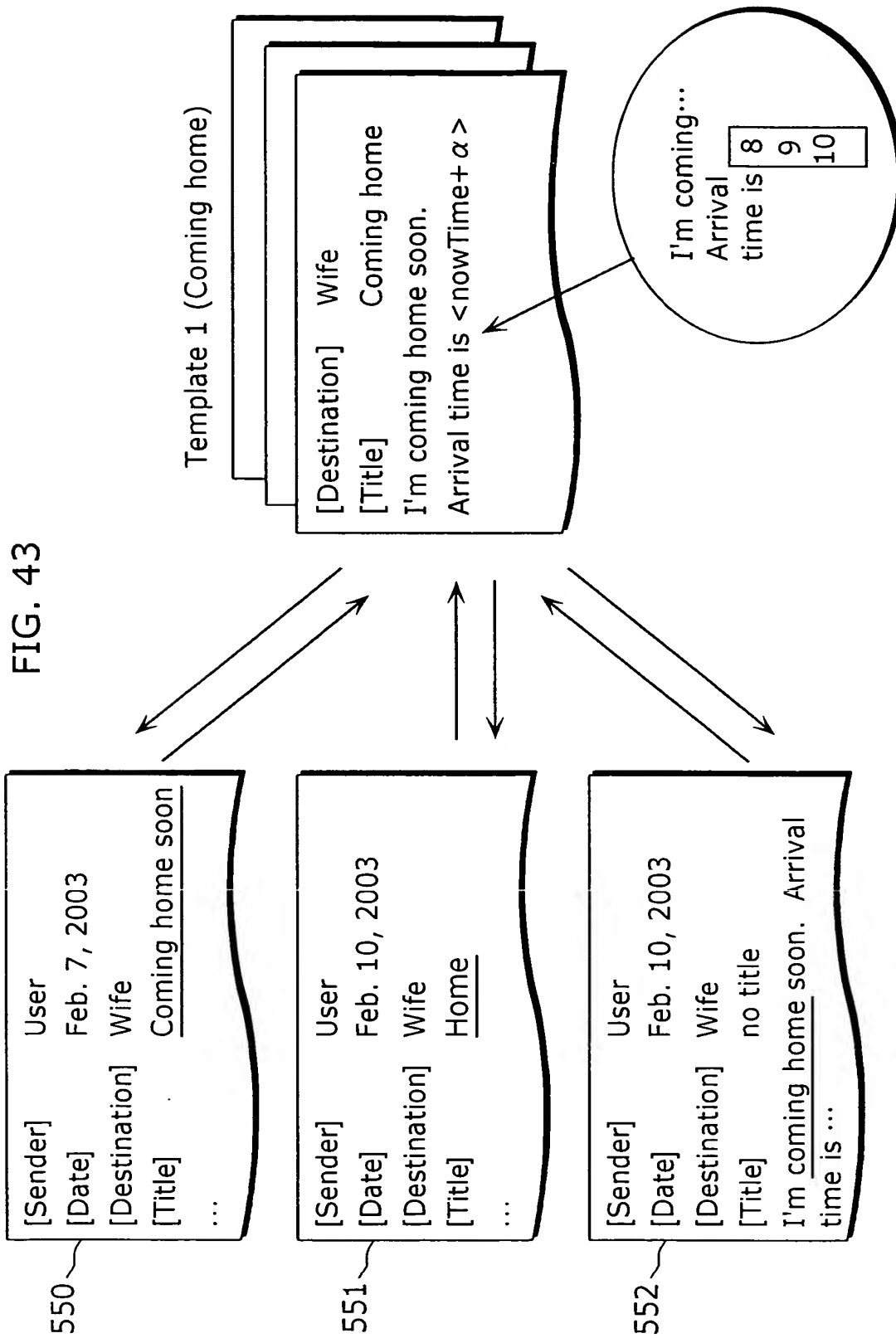


FIG. 44

| Usage date & time | Usage route | Weather condition | Usage history |
|---------------------------------------|---------------------|-----------------------------|--|
| 501 (Fri) Feb. 7, 2003 20:00 | Office → Station | Weather: Fair <...> ... | Used application: e-mail |
| | | | Destination address: <u>kazoku@xyz.ne.jp</u> (to Wife) |
| | | | Template 1 (Coming home 1) |
| | | | Title: Coming home soon |
| | | | Outgoing message: I've just left the office. Arrival time will be around 21:00. |
| 502 (Mon) Feb. 10 2003 20:00 | Office → Station | Weather: Rainy <...> ... | Used application: e-mail |
| | | | Destination address: <u>kazoku@xyz.ne.jp</u> (to Wife) |
| | | | Template 2 (Coming home 2) |
| | | | Title: Coming home soon |
| | | | Outgoing message: I've just left the office. Please come and pick me up at the station around 20:40. |

FIG. 45

| Usage situation | Application | Contents | Number of uses |
|---|-------------|---|----------------|
| Time: Weekday night Location: Office → Station Weather: Fair | E-mail | Destination address: Wife | 50 |
| | | Template 1: (Coming home 1) | |
| | | Title: Coming home soon | |
| | | Outgoing message: I've just left ... | |
| Time: Weekday night Location: Office → Station Weather: Rainy | E-mail | Destination address: Wife | 25 |
| | | Template 2 (Coming home 2) | |
| | | Title: Coming home soon | |
| | | Outgoing message: I've just left ... pick me up at the station ... | |
| ... | TV | ... | 30 |
| Weather: Rainy | E-mail | Destination address: Son | 15 |
| | | Template 3 (Pickup) | |
| | | Title: Shall I pick you up? | |
| | | Outgoing message: ... pick you up at AA station at 20:00 ... | |
| Location: Station → Supermarket | E-mail | Destination address: Wife | 15 |
| | | Template 5 (Shopping) | |
| | | Title: Shopping | |
| | | Outgoing message: ... make a stop at Supermarket AA ... | |
| ... | ... | ... | |

FIG. 46

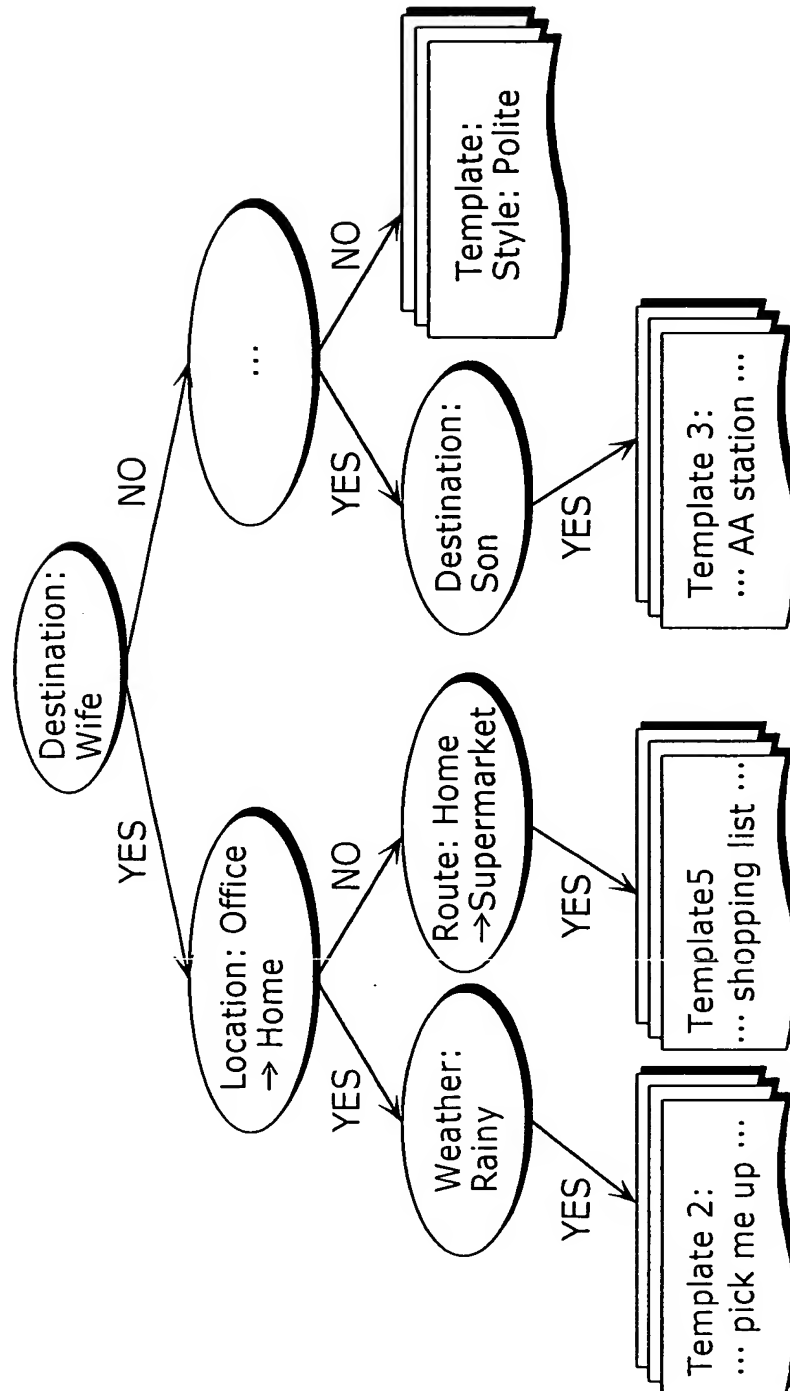
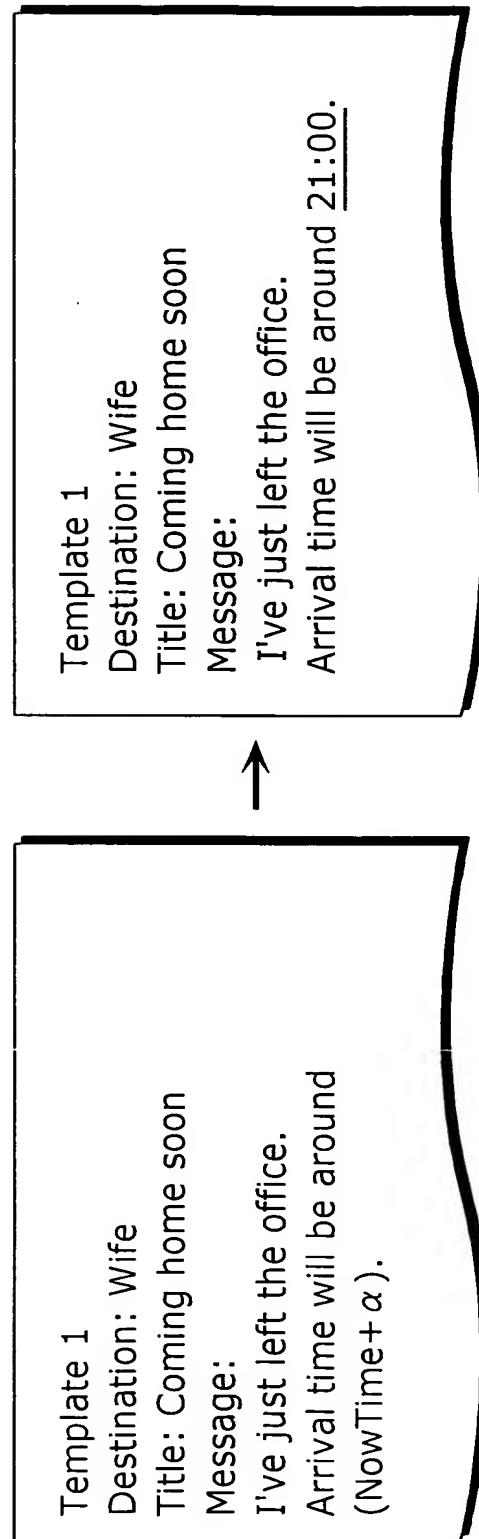


FIG. 47



$$\begin{aligned}\text{Arrival time} &= \text{NowTime} + \alpha (=1) \\ &= 20:00 + 1:00\end{aligned}$$

FIG. 48A

Template 1
 Destination: Wife
 Title: Coming home soon
 Message:
 I've just left the office.
 Arrival time will be around
 (NowTime + α).
 <Sentence1>



Template 1
 Destination: Wife
 Title: Coming home soon
 Message:
 I've just left the office.
 Arrival time will be around 21:00.
Please cool beer...
Please record TV program on channel 48 ...

FIG. 48B

| Content | Content parameter | |
|-----------------------------|------------------------------------|---|
| Template 1 (Coming home) | <Arrival time NowTime + α > | $\alpha = 1$ |
| | <Sentence1> | Please cool beer. (Number of uses: 20) |
| | | Please record TV program on channel 48. (Number of uses: 10) |
| Template | <...>... | ... |

FIG. 49

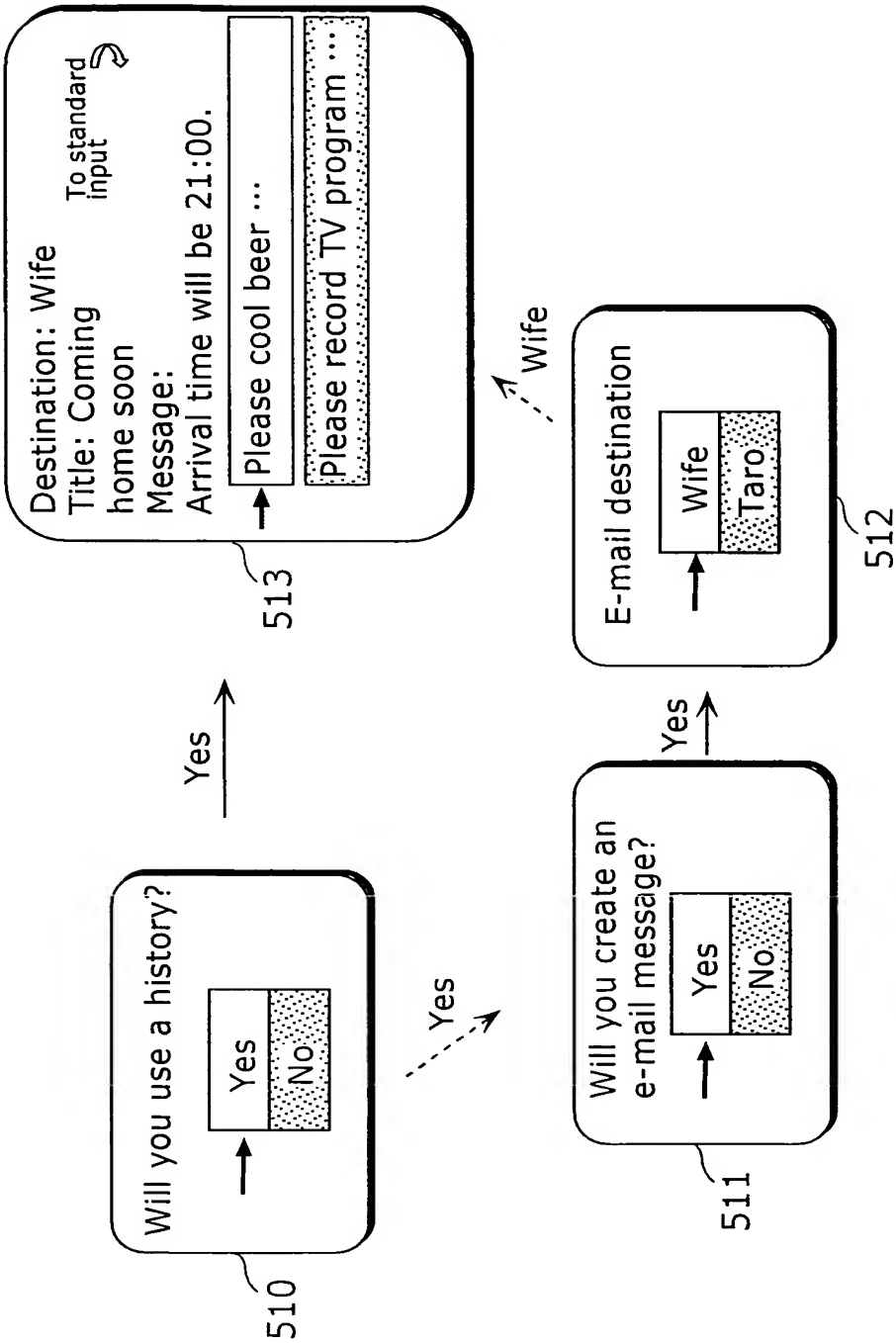


FIG. 50

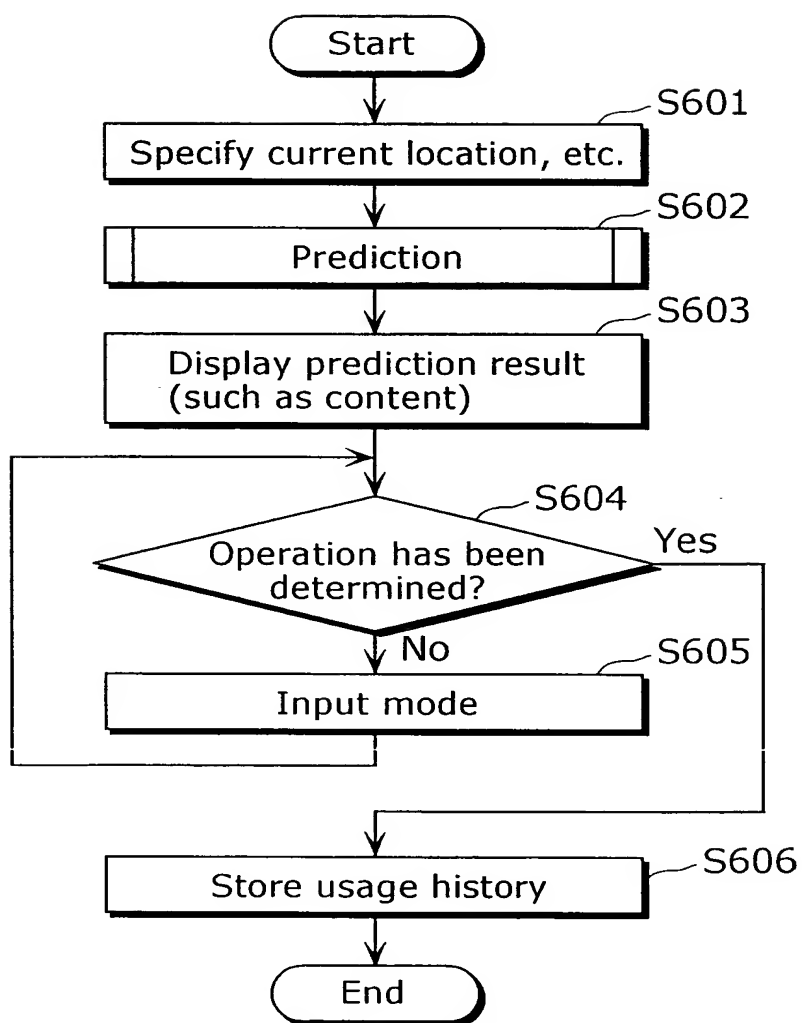


FIG. 51

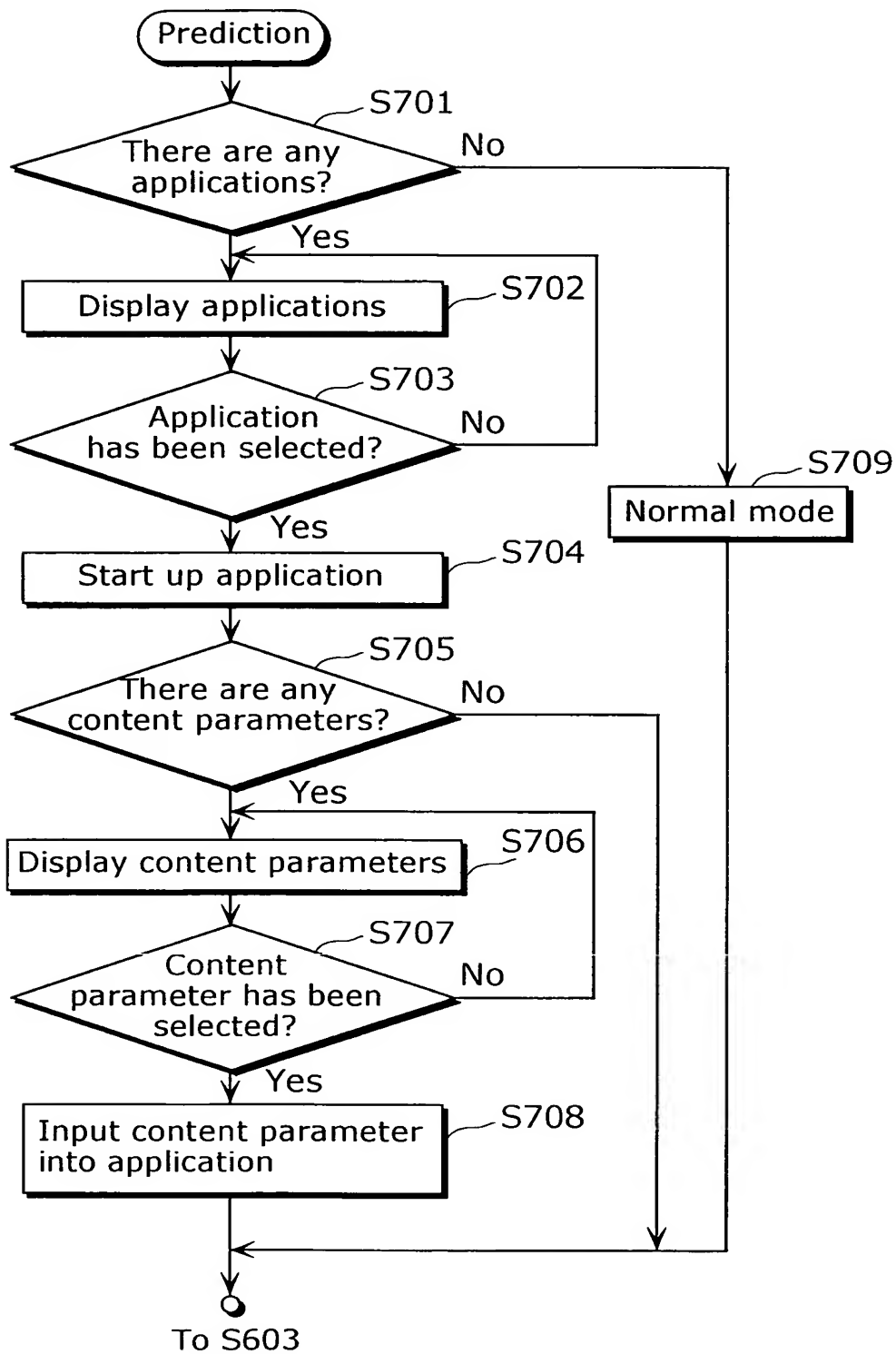


FIG. 52

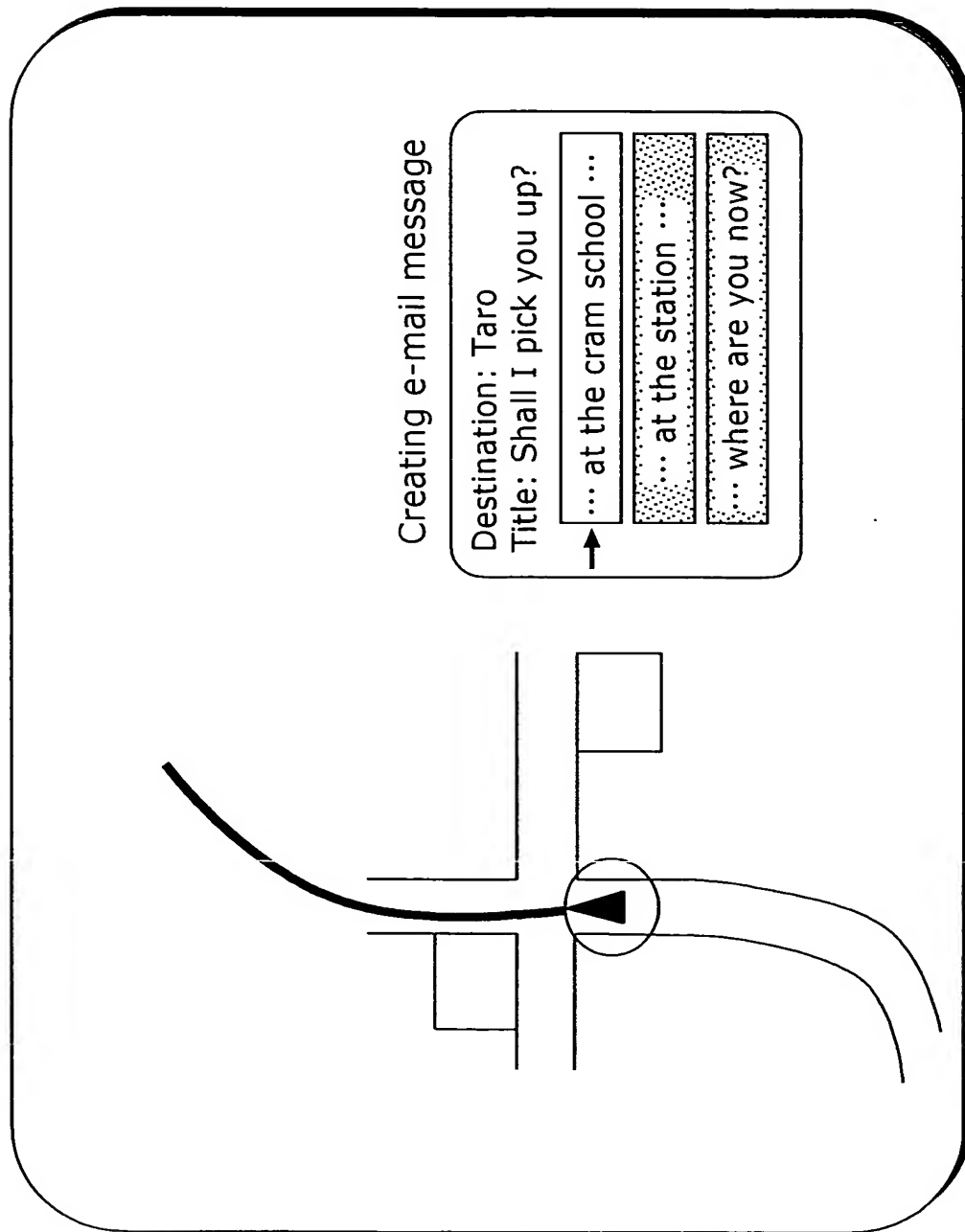


FIG. 53

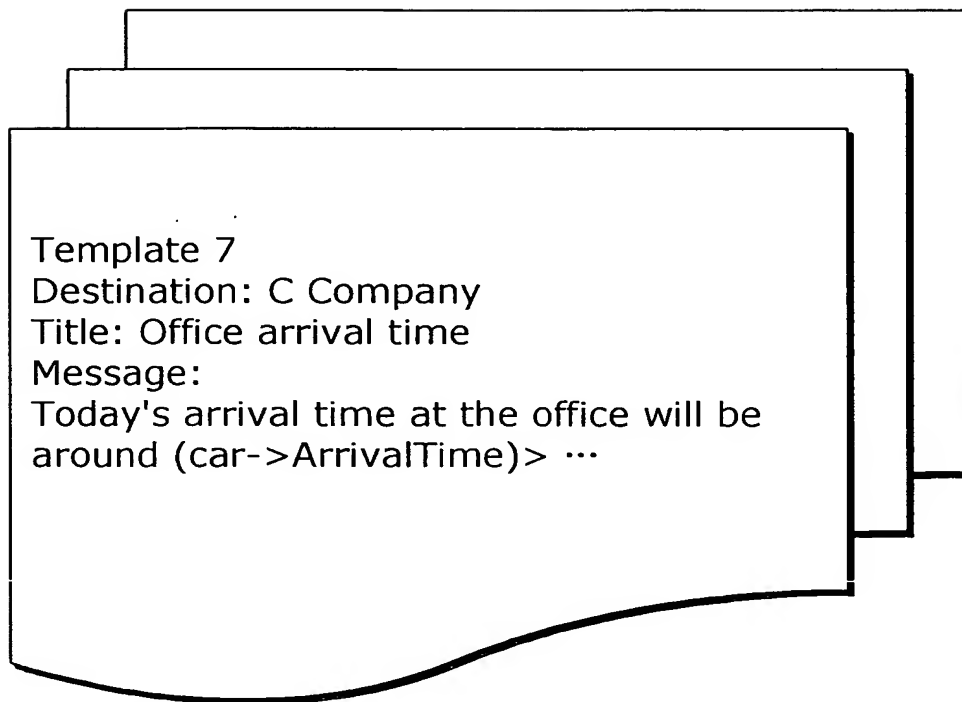


FIG. 54

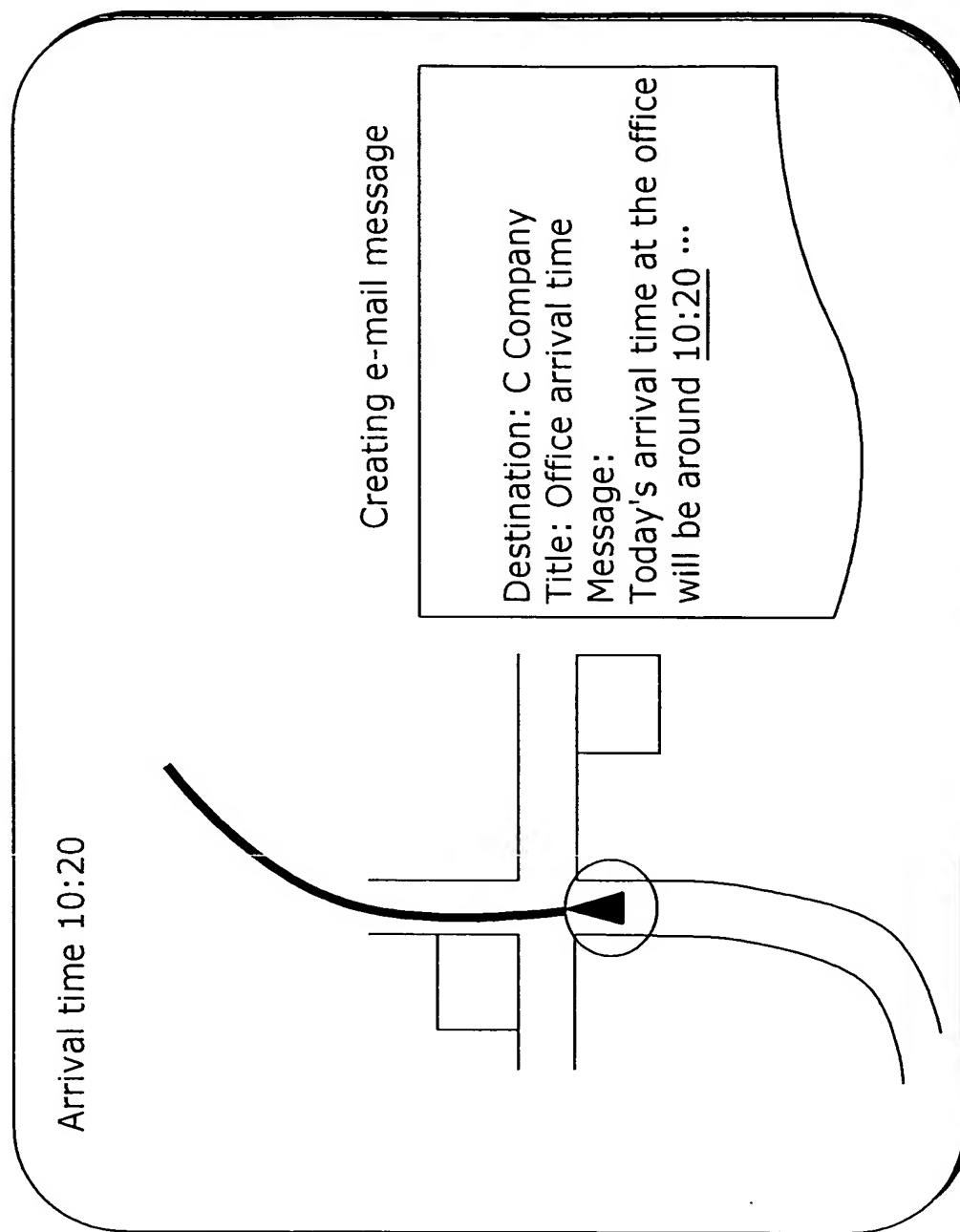


FIG. 55

| Usage situation | Application | Content | Number of uses |
|--|-------------|--|----------------|
| Time: Weekday daytime Location: AA station → BB station <...> | TV | Ch8: AB news | 50 |
| | | Volume: 75 | |
| | | Mode: 480×320 | |
| | | | |
| Time: Weekday night Location: AA station → BB station <...> | General | Manner mode | 25 |
| | | Reception-permitted party: C Company | |
| | | Reception-rejected party: None | |
| | | ... | |
| Time: Weekday Location: Office <...> | General | Manner mode | 25 |
| | | Reception-permitted party: Family member | |
| | | Reception-rejected party: Others | |
| | | ... | |
| Location: Movie theater | | Manner mode | |
| ... | ... | ... | |

FIG. 56

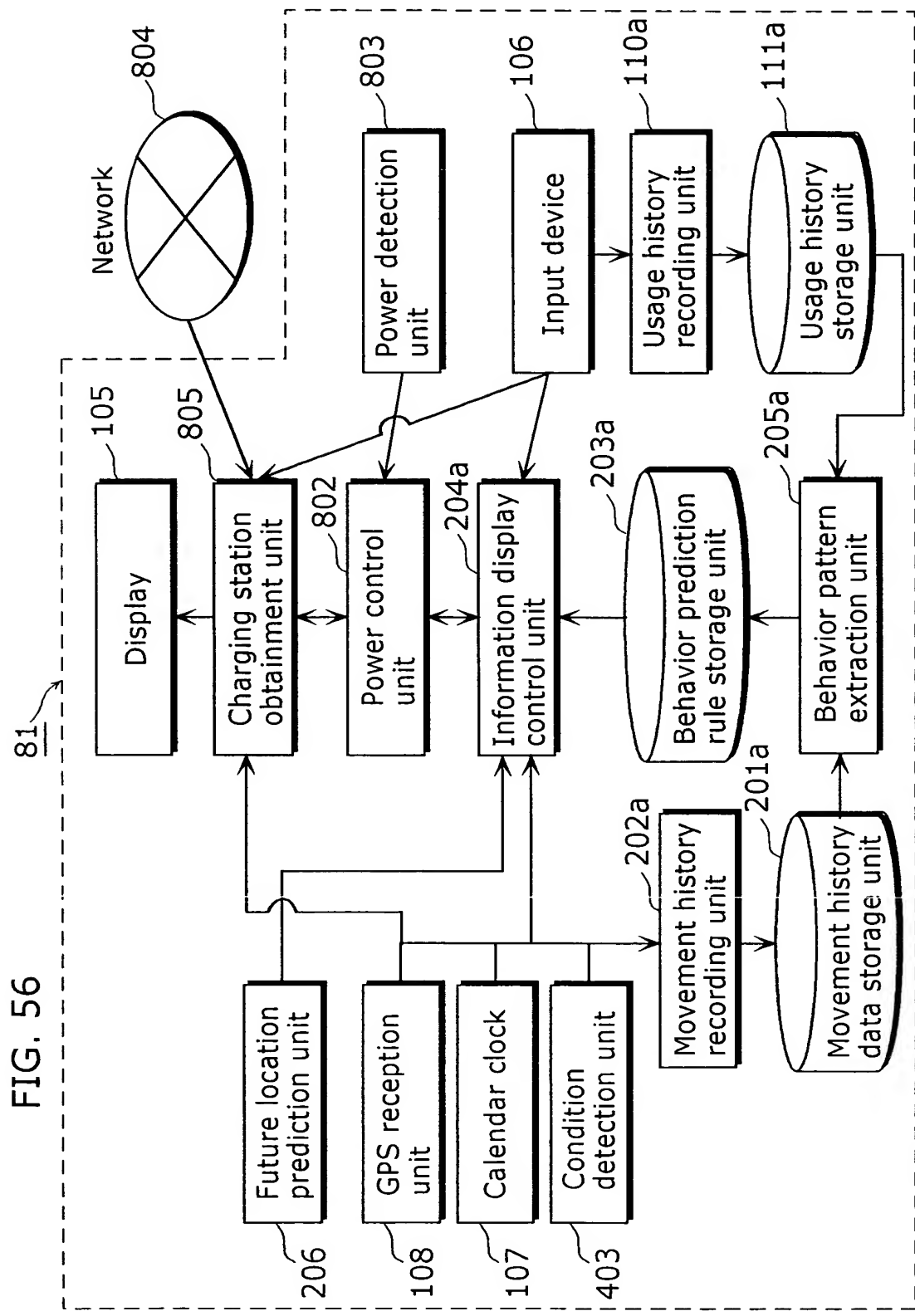


FIG. 57

| Usage situation | Application | Content parameter | Number of uses |
|---|-----------------|--|----------------|
| Time: Weekday night Location: Office → Station <...> | Music player | Album to be played back: CD1 | 50 |
| | | Music to be played back: track 5 | |
| | | Volume: 75 | |
| | | Usage duration: 20 minute | |
| Time: Weekday night Location: Office → Station <...> | TV | Program to be reproduced: AB news | 25 |
| | | Reproduction mode: ... 480 × 320 | |
| | | Volume : 50 | |
| | | Usage duration: 60 minutes | |
| Time: Weekday night Location: AA station → BB station <...> | Music player | ... | 15 |
| | | | |
| | | | |
| | | Usage duration: 20 minutes | |
| Time: Weekday night Location: BB station → Home <...> | E-mail | Destination address: Wife | 15 |
| | | Template 5 (Shopping) | |
| | | Title: Shopping | |
| | | Outgoing message: I will go to supermarket ... | |
| Time: Holiday daytime Location: Home | Game | Content: CD race | 15 |
| | | Data: ... | |
| | | Usage duration: 40 minutes | |
| | ... | | |

FIG. 58

| Date & Time Location | Destination | Number of movements | Movement probability |
|---|-----------------------|------------------------|-------------------------|
| Date & time: Weekday night Location: Office→AA station | AA station→BB station | 190 | 95% |
| | ... | ... | ... |
| | | | |
| | | | |
| Date & time: Holiday daytime Location: Home | G station | 101 | 92% |
| | ... | ... | ... |
| | | | |
| | | | |
| Date & time: Weekday morning Location: Home | BB station→AA station | 190 | 95% |
| | ... | ... | ... |
| | | | |
| | | | |

FIG. 59

Power consumption table 853

| Application | Content parameter | Power coefficient |
|-----------------|---------------------|-------------------|
| Music player | Volume 75 | 3 |
| TV | FineMode, Volume 50 | 5 |
| Movie player | | 4 |
| Game | AA racing | 3 |
| Picture display | 1 frame | 0.1 |
| | | |
| | | |
| | | |
| | | |

FIG. 60

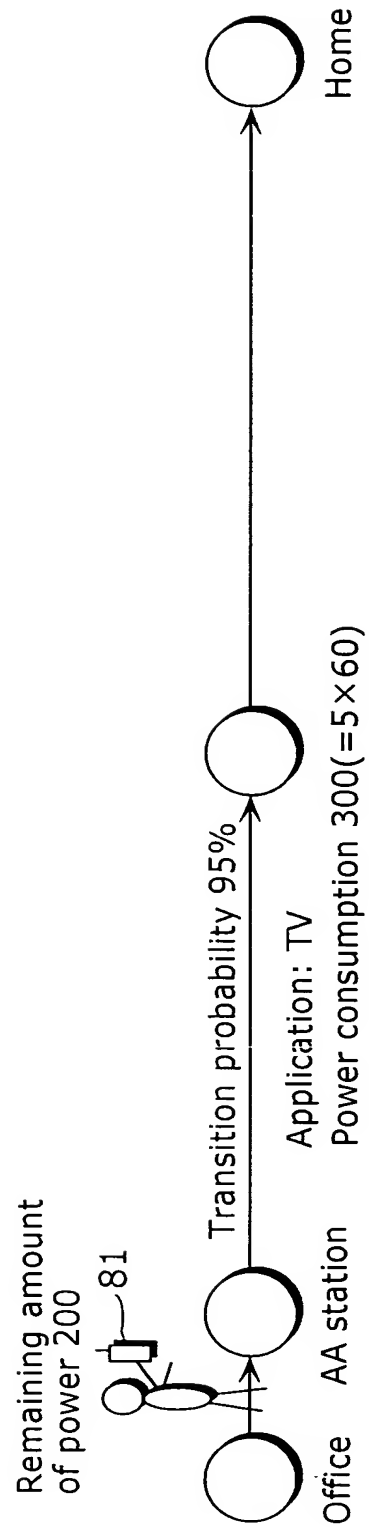


FIG. 61

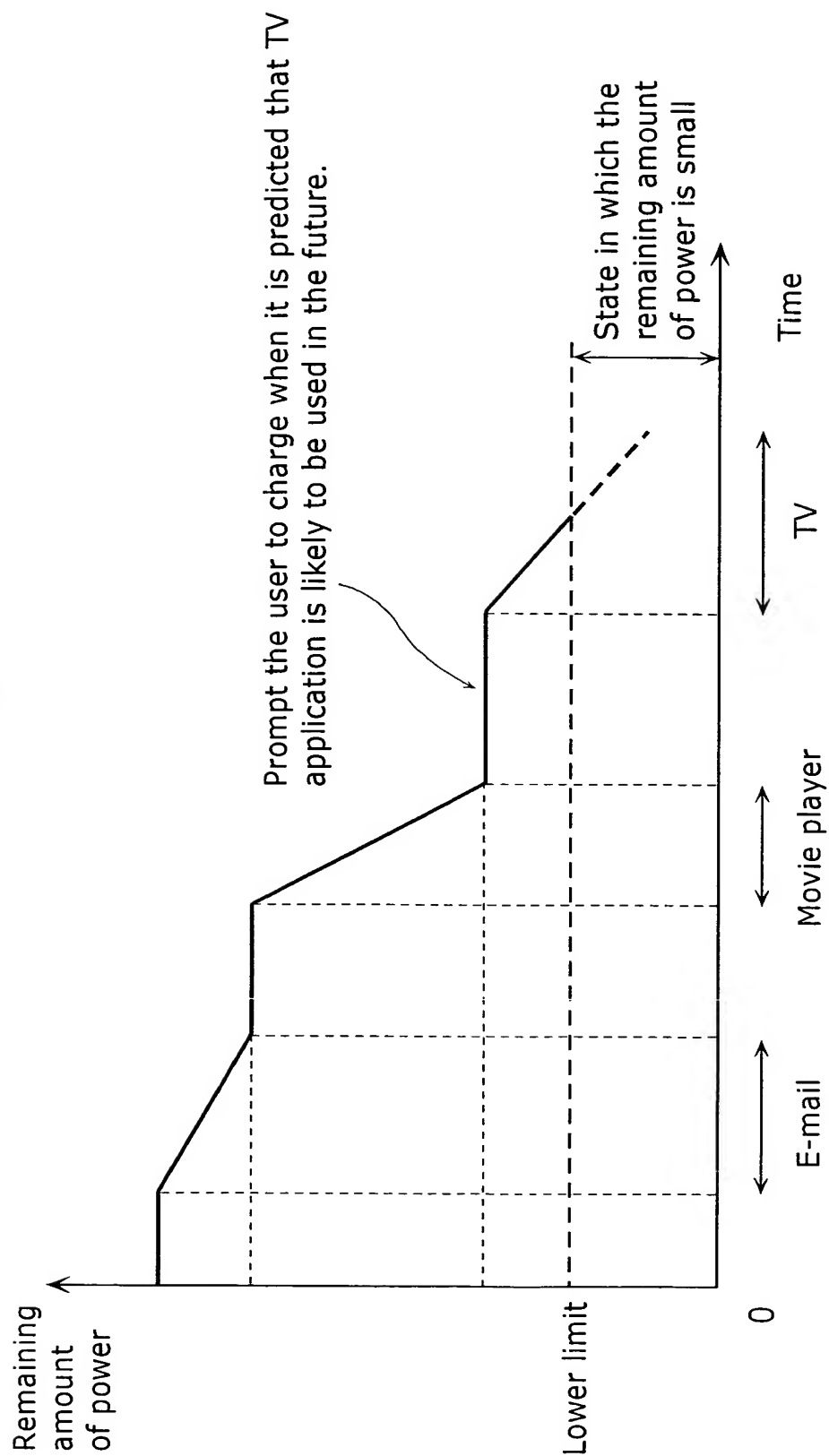


FIG. 62

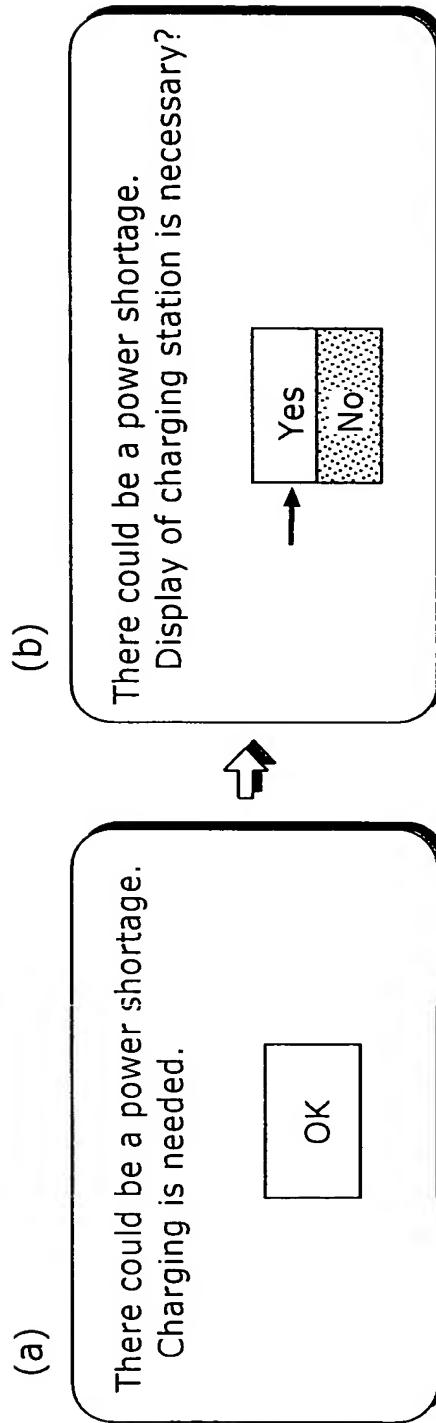


FIG. 63

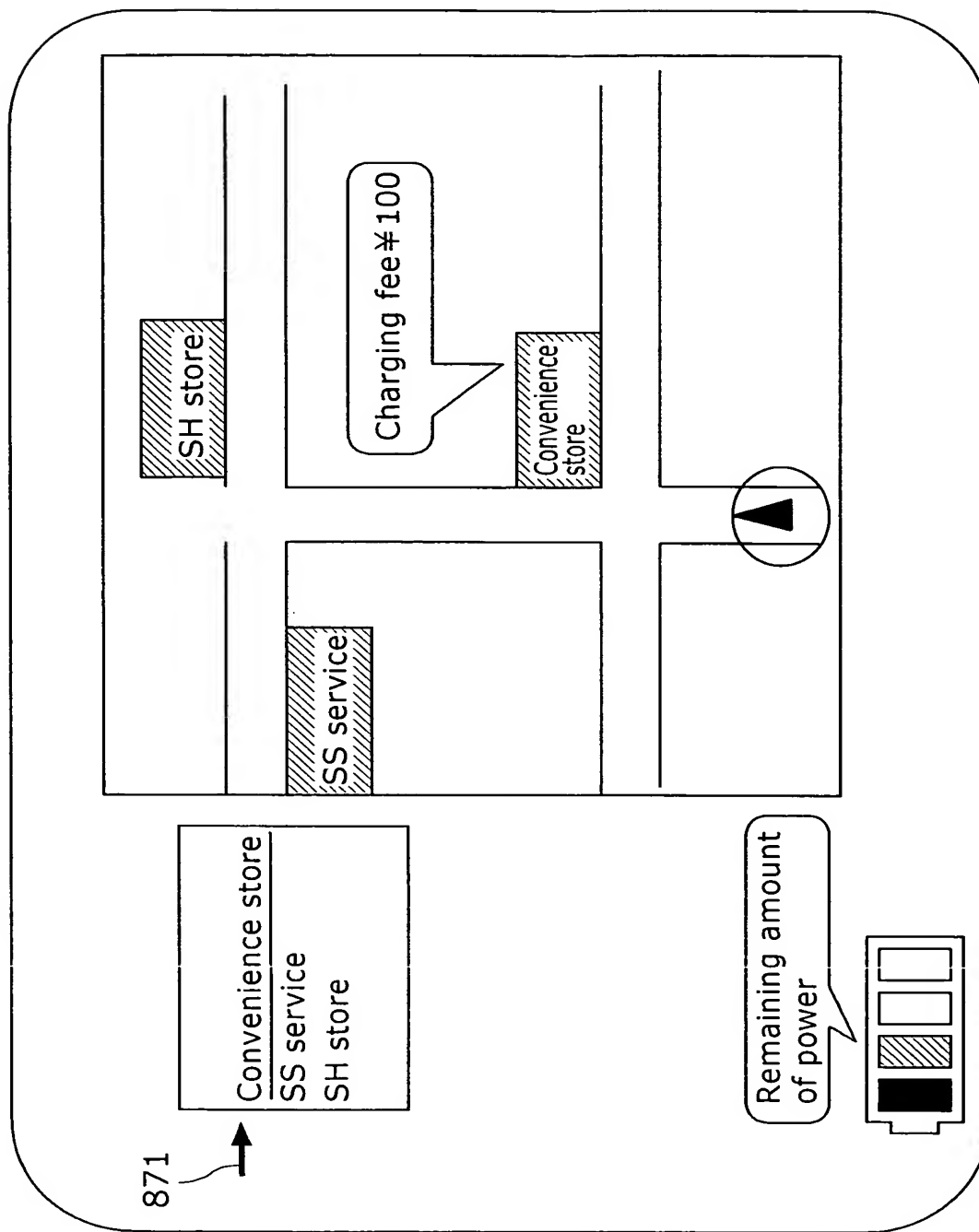
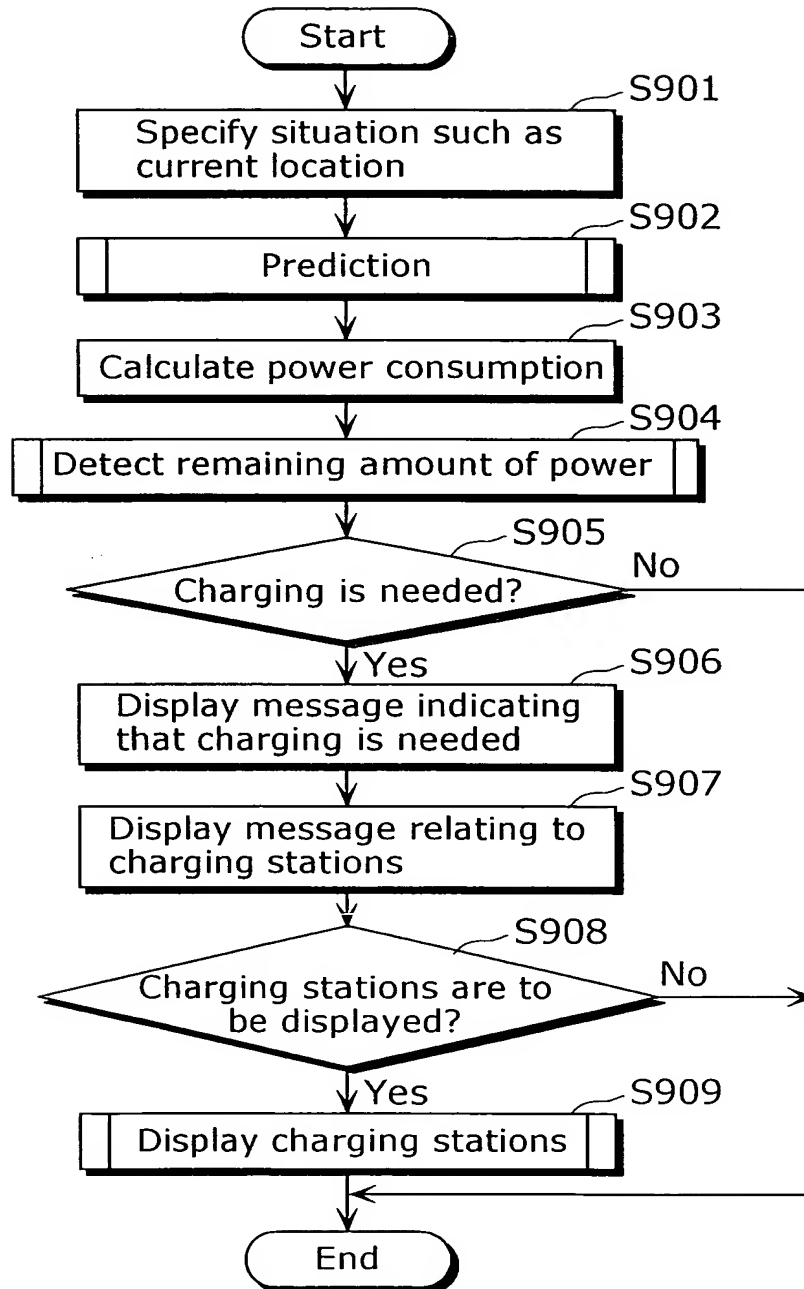


FIG. 64



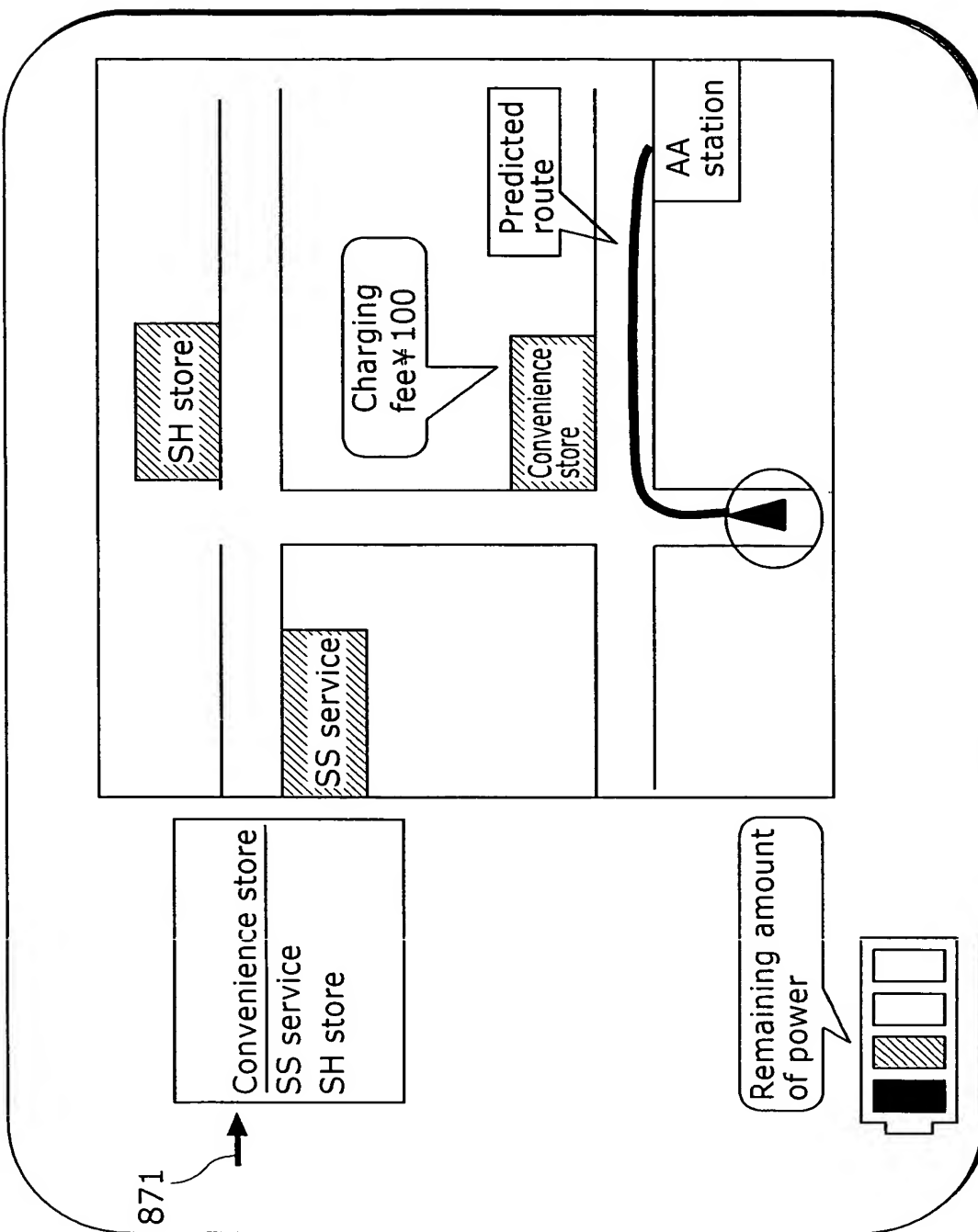


FIG. 65

FIG. 66

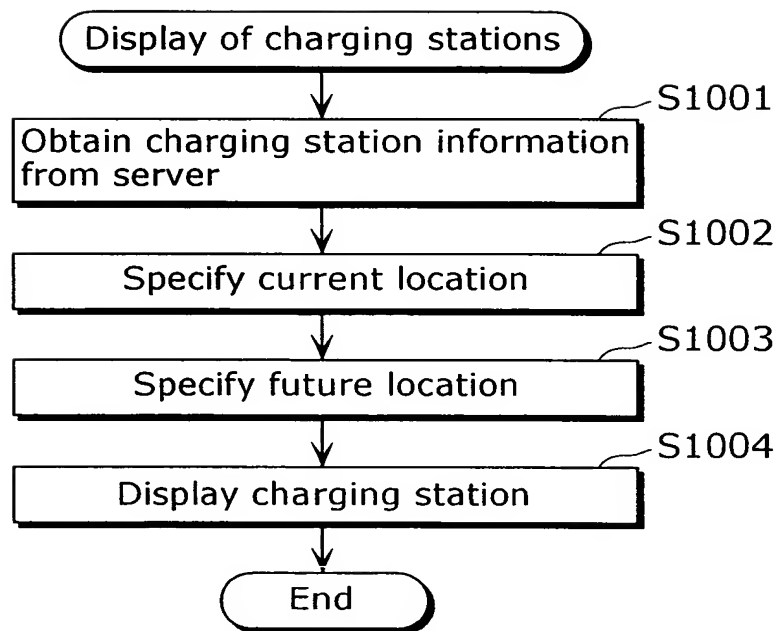


FIG. 67

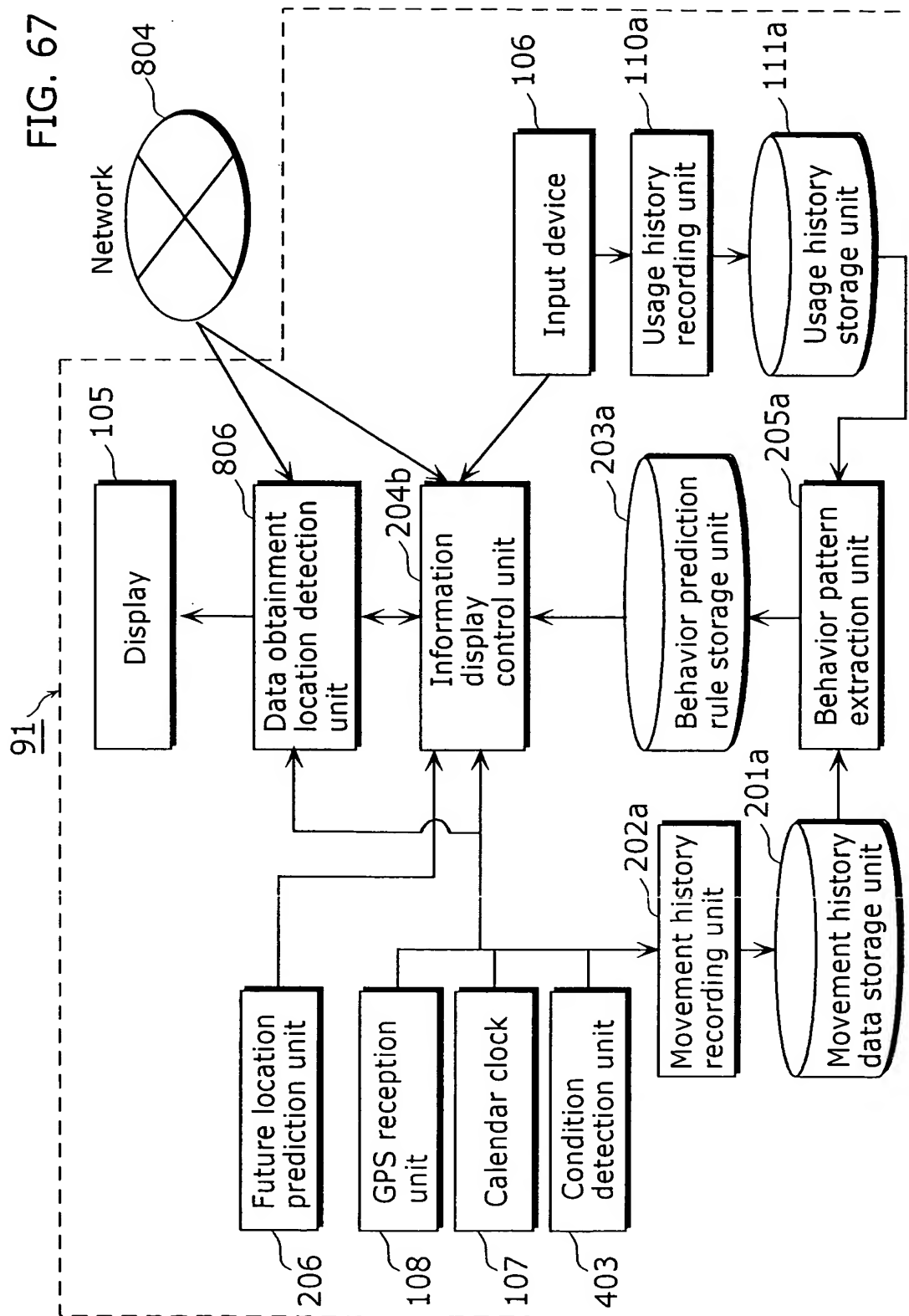


FIG. 68

| Usage situation | Application | Content parameter | Number of uses |
|---|--------------|---|----------------|
| Time: Weekday night Location: Office → Station <...> | Music player | Album to be played back: <u>CountDown100</u> (to be obtained) | 50 |
| | | Number to be played back: track5 | |
| | | Volume : 75 | |
| | | Usage duration: 20 minutes | |
| Time: Weekday night Location: AA station → BB station <...> | Movie player | Program to be reproduced: <u>AB stock news</u> (to be obtained) | 25 |
| | | Reproduction mode:...480×320 | |
| | | Volume : 50 | |
| | | Usage duration: 60 minutes | |
| Time: Weekday night Location: AA station → BB station <...> | Game | Content: <u>CD match race</u> | 15 |
| | | Character data (to be obtained) | |
| | | ... | |
| | | Usage duration: 20 minutes | |
| Time: Weekday night Location: BB station → Home <...> | Game | Content: <u>EF match race</u> | 15 |
| | | Data | |
| | | | |
| | | | |
| | ... | | |

FIG. 69

No music to be played back is held.
Is display of download place needed?

→

| |
|-----|
| Yes |
| No |

FIG. 70

Music to be played back has been updated.
Is display of download place needed?

→

| |
|-----|
| Yes |
| No |

FIG. 71

Download place list data

| Data name | Place | Fee to be billed | Coupon |
|--|---|------------------|----------|
| Program to be reproduced: AB stock news | Latitude N1, Longitude E1 1 km in radius | ¥10/kbyte | 1 point |
| | Latitude N2, Longitude E2 0.5 km in radius | | |
| Album to be played back: Count Down100 | Latitude N3, Longitude E2 Download machine | ¥20/kbyte | 2 points |
| | Latitude N4, Longitude E4 0.3 km in radius | | |
| Town information | Latitude N5, Longitude E5 Download machine | ¥100/kbyte | 3 points |

FIG. 72A

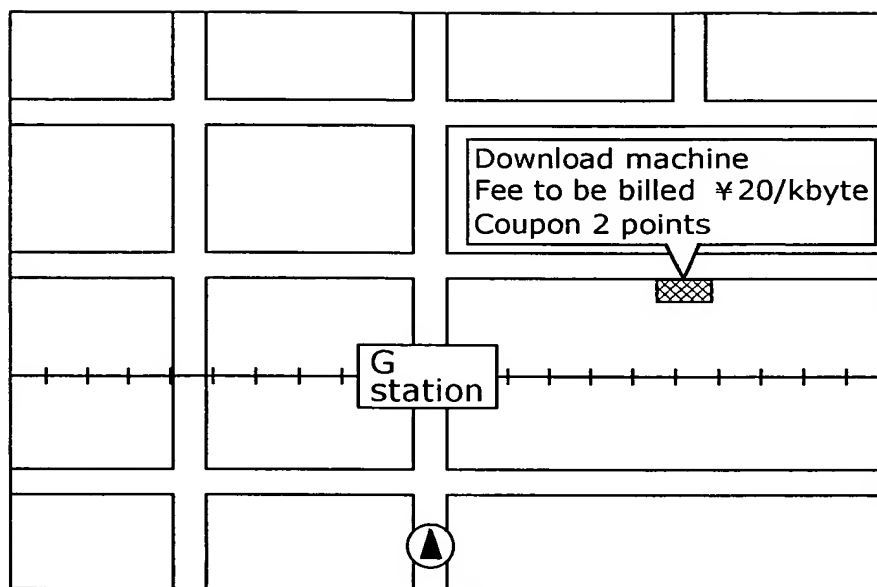


FIG. 72B

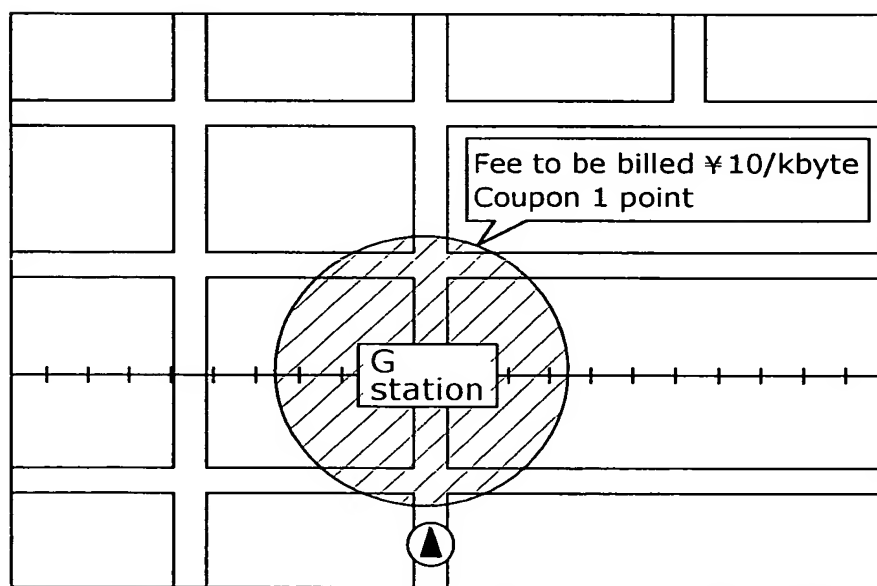


FIG. 73

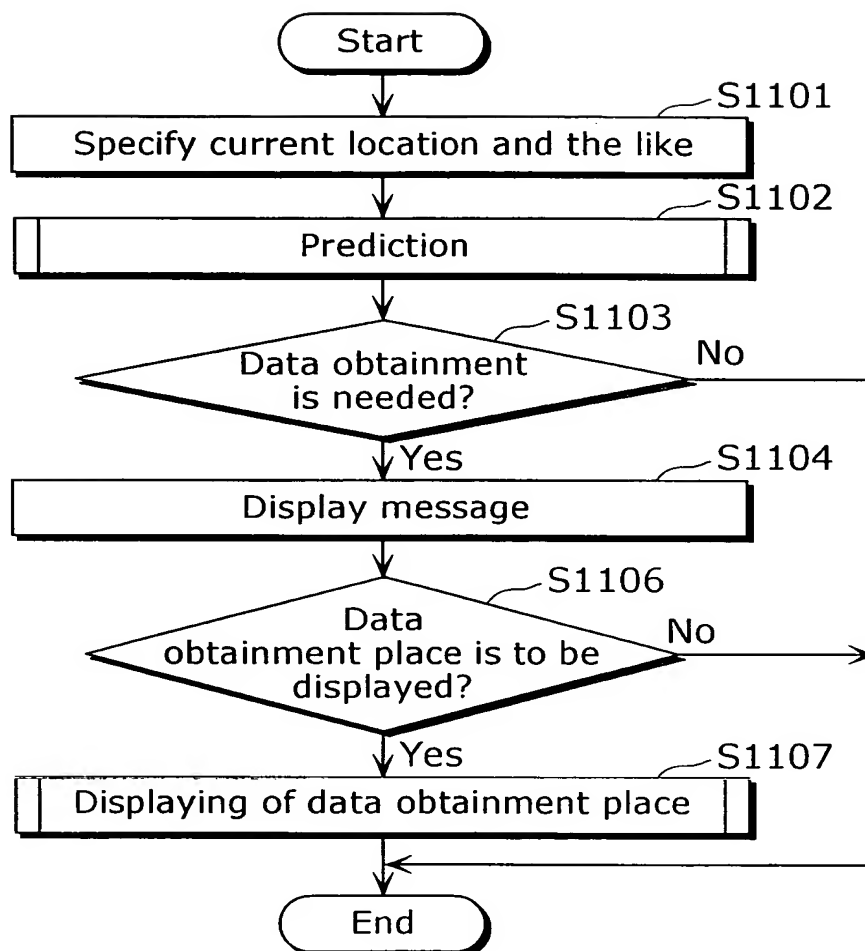


FIG. 74

